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# **DRAFT ENVIRONMENTAL IMPACT REPORT**

CIRCLE S RANCH  
EROSION CONTROL PLAN

APPLICATION NO. P06-01508-ECPA



**NOVEMBER 2008**

Lead Agency:  
Napa County Conservation,  
Development and Planning  
1195 Third Street, Suite 210  
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Prepared By:

Analytical Environmental Services  
1801 7th Street, Suite 100  
Sacramento, CA 95811

The logo for Analytical Environmental Services (AES), consisting of the letters "AES" in a bold, stylized, metallic font.

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# CHAPTER 1.0

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## INTRODUCTION

### 1.1 PURPOSE OF THE ENVIRONMENTAL IMPACT REPORT (EIR)

The Napa County Conservation, Development and Planning Department (Napa County), as the lead agency, has prepared this EIR to provide the public and responsible and trustee agencies with information about the potential effects, both beneficial and adverse, of the implementation of the Circle S Ranch Erosion Control Plan Application (ECPA) #P06-01508-ECPA (proposed project) on the local and regional (natural and human) environment. This EIR was prepared in compliance with the California Environmental Quality Act (CEQA) of 1970 (as amended), the CEQA *Guidelines* (CEQA, 2006), and Napa County's local CEQA Guidelines (Napa County, 2004).

As described in CEQA *Guidelines* Section 15121(a), an EIR is a public information document that assesses potential environmental impacts of the proposed project, as well as identifies mitigation measures and alternatives to the proposed project that could reduce or avoid adverse environmental impacts. CEQA requires that state and local government agencies consider the environmental consequences of projects over which they have discretionary authority. The EIR is an informational document used in the planning and decision-making process. It is not the intent of an EIR to recommend either approval or denial of a project.

CEQA requires that a lead agency neither approve nor carry out a project as proposed unless the significant environmental effects have been reduced to an acceptable level, or unless specific findings are made attesting to the infeasibility of altering the project to reduce or avoid environmental impacts (CEQA *Guidelines*, Sections 15091 and 15092). An acceptable level is defined as eliminating, avoiding, or substantially lessening the significant effects. CEQA also requires that decision-makers balance the benefits of a proposed project against its unavoidable environmental risks. If environmental impacts are identified as significant and unavoidable, the project may still be approved if it is demonstrated that social, economic, or other benefits outweigh the unavoidable impacts. The lead agency would then be required to state in writing the specific reasons for approving the project based on information presented in the EIR, as well as other information in the record. This process is defined as a "Statement of Overriding Considerations" by the CEQA *Guidelines*, Section 15093.

This EIR describes the environmental impacts of the various components of the project, and suggests mitigation measures to avoid or reduce impacts to less than significant levels. The impact analyses in this report are based on a variety of sources, including agency consultation, various reports prepared by others, and reports and field surveys completed by Analytical Environmental Services (AES) staff. The property as it exists at the time of the Notice of Preparation (June 2007) is considered the baseline for analyzing the effects of the project.

The EIR considers the entirety of the proposed project. In addition, the EIR analyzes the effectiveness of the erosion control measures as designed in #P06-01508-ECPA to control short- and long-term erosion and attenuate runoff. The proposed project is designed with the goal of being self-mitigating and the review and analysis determines whether this goal is met or whether additional mitigation measures or erosion control measures are required.

In general, agriculture activities are not subject to County discretionary approval; however, projects involving grading, earthmoving, or land disturbance activities of any kind on slopes greater than five percent require preparation and approval of an ECPA, which is subject to review under CEQA. The property is zoned for agricultural use and the establishment of a vineyard is consistent with the Napa County General Plan (2008) designation of Agriculture Watershed Open Space (AWOS) and Agricultural Resource (AR), and zoning designation of Agricultural Watershed District (AW). Upon the County's approval of #P06-01508-ECPA, new vineyard on slopes greater than five percent could be developed on the property. It should be noted that the proposed project also consists of the development of new vineyard blocks on land with slopes less than five percent, which are not required to be covered by an erosion control plan. These areas were evaluated in the environmental studies conducted during development of the ECPA and are subject to the same mitigation measures. Proposed vineyard development, along with subsequent vineyard activities such as vineyard maintenance and operation (including harvest) are considered indirect physical changes. Potential cumulative effects of the project when combined with other past, present, or probable future projects are also considered.

## **1.2 BACKGROUND**

### **1.2.1 INTRODUCTION AND OVERVIEW OF AGRICULTURAL ACTIVITIES**

In accordance with the County Code Section 18.108.080 (Napa County, 2005), Circle S Ranch filed an agricultural ECPA (#P06-01508-ECPA) for development on the 1,593-acre Circle S Ranch of approximately 337 acres of new vineyard within 411 gross acres. In addition, development of approximately 41 acres of new vineyard within approximately 48 gross acres would occur on slopes of less than five percent, which brings the total project

acreage to 378 net acres within 459 gross acres. This includes approximately 28.8 acres of rock storage areas. The Circle S Ranch LLC property's Assessor Parcel Numbers (APNs) and their acreages include: 032-080-061 (21 acres), 032-080-062 (23 acres), 032-080-063 (30 acres), 032-080-064 (23 acres), 032-080-065 (63 acres), 032-080-066 (26 acres), 032-080-067 (41 acres), 032-080-068 (30 acres), 032-080-069 (19 acres), 032-080-070 (5 acres), 032-080-071 (318 acres), 032-080-072 (45 acres), 032-080-073 (319 acres), 032-080-074 (84 acres), 032-080-075 (199 acres), 032-080-076 (120 acres), 032-160-069 (93 acres), 032-160-070 (38 acres), 032-160-071 (48 acres), and 032-160-072 (48 acres).

Agricultural preservation and land use planning goals and policies were adopted in the Napa County General Plan (Napa County, 2008). Some of the goals and policies applicable to this project include:

- Goal AG/LU-1: Preserve existing agricultural land uses and plan for agriculture and related activities as the primary land uses in Napa County.
- Goal AG/LU-3: Support the economic viability of agriculture, including grape growing, winemaking, other types of agriculture, and supporting industries to ensure the preservation of agricultural lands.
- Goal AG/LU-6: Create a stable and predictable regulatory environment that encourages investment by the private sector and balances the rights of individuals with those of the community and the needs of the environment.
- Policy AG/LU-1: Agriculture and related activities are the primary land uses in Napa County.
- Policy AG/LU-4: The County will reserve agricultural lands for agricultural use including lands used for grazing and watershed/open space, except for those lands which are shown on the Land Use Map as planned for urban development.
- Policy AG/LU-15: The County affirms and shall protect the right of agricultural operators in designated agricultural areas to commence and continue their agricultural practices (a "right to farm"), even though established urban uses in the general area may foster complaints against those agricultural practices. The "right to farm" shall encompass the processing of agricultural products and other activities inherent in the definition of agriculture provided in Policy AG/LU-2, above. The existence of this "Right to Farm" policy shall be indicated on all parcel maps approved for locations in or adjacent to designated agricultural areas and shall be a required disclosure to buyers of property in Napa County.
- Policy AG/LU-20: The following standards shall apply to lands designated as Agriculture, Watershed, and Open Space on the Land Use Map of this General Plan. Intent: To provide areas where the predominant use is agriculturally oriented; where watersheds are protected and enhanced; where reservoirs, floodplain tributaries, geologic hazards, soil conditions, and other constraints make the land relatively unsuitable for urban development; where urban development would adversely impact

all such uses; and where the protection of agriculture, watersheds, and floodplain tributaries from fire, pollution, and erosion is essential to the general health, safety, and welfare.

- Policy AG/LU-21: The following standards shall apply to lands designated as Agricultural Resource on the Land Use Map of this General Plan.

Intent: To identify areas in the fertile valley and foothill areas of the county in which agriculture is and should continue to be the predominant land use, where uses incompatible with agriculture should be precluded, and where the development of urban type uses would be detrimental to the continuance of agriculture and the maintenance of open space which are economic and aesthetic attributes and assets of the County of Napa.

In the Conservation Element of the General Plan, the maintenance and enhancement of the agricultural environment is included as a planning policy (Policy CON-2). The policy expresses the intent of Napa County to provide a permanent means of preserving open space land for agricultural production by using various methods including zoning (Napa County Code Section 18.12.010). The above goals and policies comprise a set of development guidelines from which land use designations were developed. The AWOS and AR General Plan designations for the subject property are examples. The respective goals of these designations are to provide areas where the predominant use is agriculturally oriented and where the protection of agriculture is essential to the general health, safety, and welfare, and to continue agricultural use of identified fertile valley and foothill areas.

There are several related sections from the Napa County Code of relevance to the project. In Napa County Code Chapter 2.94 – Agriculture and Right to Farm, the County affirms and protects the right of agriculture operators in designated agricultural areas, even though established urban uses in the general area may foster complaints against those agricultural practices. Napa County Code Chapter 18.04 recognizes the role of agriculture in the County's economic vitality. Napa County Code Chapter 18.108 pertains to hillside agriculture and the need to establish standards on slopes over five percent. In addition, Napa County Code Chapter 18.20 – Agricultural Watershed District, concerns the protection of the public interest in drainage systems and water impoundments from sedimentation, siltation, and contamination by ensuring agricultural projects use sound short- and long-term erosion control measures.

The County has discretion over earthmoving activities on slopes greater than five percent (Napa County Code 18.108.070 (B)). Napa County Code 18.108.070 (B) requires the preparation of an ECPA for earthmoving and grading activities on slopes greater than five percent. The ECPA is subject to the exercise of judgment or deliberation when the County approves the ECPA; thus, the approval of an ECPA is a discretionary action and subject to CEQA. Subsequent agricultural activities, such as vineyard planting and operations, are not

subject to CEQA; however, they are considered indirect physical changes likely to result from approval of the proposed project.

Napa County Code and Resolution 94-19 (as amended) specify the contents of an ECPA and all elements that are required before the ECPA is accepted. These contents are described in the County's Erosion Control Plan (ECP) Review Application Packet for Structure/Road/Driveway, General Land Clearing, and Agricultural Projects. A qualified professional as described in Section 18.108.080 of the County Code must prepare the ECP.

## 1.3 PUBLIC OUTREACH

Early coordination with the general public, appropriate public agencies, and local jurisdictions is encouraged in the environmental review process to determine the scope of the environmental document, the level of analysis, and related environmental requirements.

### 1.3.1 INITIAL STUDY AND NOTICE OF PREPARATION

An Initial Study was prepared for the proposed project in accordance with CEQA *Guidelines* Section 15063 (**Appendix A**). Based on the Initial Study, it was determined that an EIR should be prepared. In accordance with Section 15082 of the CEQA *Guidelines*, Napa County, as lead agency, prepared a Notice of Preparation (NOP) for this Draft EIR. The NOP is also presented in **Appendix A**. The Governor's Office of Planning and Research, State Clearinghouse (SCH) circulated the NOP to local, state, and federal agencies on June 15, 2007, for a 30-day review period that ended on July 15, 2007. The SCH assigned the NOP SCH #2007062069. Napa County also distributed the NOP and Initial Study to local, state, and federal agencies, and other interested parties during the review period. The NOP was circulated to inform responsible agencies and the public that the proposed project could have significant effects on the environment and to solicit their comments.

The issues discussed within this EIR are those that have been identified within the Initial Study as having potentially significant impacts. The following environmental issue areas were found to have the potential to be significantly affected by the proposed project and are addressed in greater detail in this Draft EIR.

- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Hazardous Materials
- Hydrology and Water Quality
- Transportation and Traffic
- Cumulative Impacts

### 1.3.2 COMMENTS ON THE NOTICE OF PREPARATION

Napa County received eight comment letters on the NOP. These comment letters were considered during preparation of the Draft EIR and are presented in **Appendix A**. The following is a list of commenting agencies and organizations, and a summary of concerns:

- California Department of Fish and Game (CDFG) – project related impacts to special status species and habitats, and plant survey methodology. (see **Chapter 4.2 Biological Resources**);
- Napa County Resource Conservation District (RCD) – project related geology impacts and pesticide use (see **Chapters 4.4 Geology and Soils** and **4.5 Hazardous Materials**);
- State Water Resources Control Board (State Water Board) – project related use of water stored pursuant to Water Right Licenses 11041 and 11507 (see **Chapter 4.6 Hydrology and Water Quality**);
- Atlas Peak Coalition – potential impacts to transportation and traffic from construction and vehicles (see **Chapter 4.7 Transportation and Traffic**);
- California Native Plant Society (CNPS) – potential impacts to native vegetation throughout the Circle S Ranch property (see **Chapter 4.2 Biological Resources**);
- Earth Defense for the Environment Now (E.D.E.N.) – project related hydrologic changes, transportation impacts, biological impacts, wildlife corridors and fencing plans, vegetation cover and cumulative impacts of vineyard conversion, global warming, archaeological impacts, and wildland fire potential (discussed in the Initial Study) (see **Chapters 4.1 Air Quality, 4.2 Biological Resources, 4.3 Cultural Resources, 4.4 Geology and Soils, 4.6 Hydrology and Water Quality, 4.7 Transportation and Traffic, and 6.0 Other CEQA Related Sections**).
- Napa-Solano Audubon Society – potential impacts to birds, wildlife and habitat (see **Chapter 4.2 Biological Resources**); and
- Michael Parmenter – potential impacts to existing groundwater conditions (see **Chapter 4.6 Hydrology and Water Quality**);

### 1.3.3 CONSULTATION

In addition to the comments received on the NOP, the following agencies were contacted for consultation on the project:

- U.S. Army Corps of Engineers (USACE) – Jurisdictional Delineation Letter (File Number 29745N) and Map provided by Jane Hicks, Chief of the Regulatory Branch on September 26, 2005.
- U.S. Fish and Wildlife Service (USFWS) – Mike Thomas participated in a meeting at the project site on April 16, 2007. Informal consultation on Endangered and

Threatened Species dated April 24, 2007. Red-legged Frog Site Assessment submitted to Mike Thomas on August 8, 2007.

- California Department of Fish and Game (CDFG) – Corinne Gray participated in a meeting at the project site on April 16, 2007. Corinne Gray and Gene Cooley participated in a field visit of the project site on April 20, 2007.
- Regional Water Quality Control Board, San Francisco Bay District (SFRWQCB) – Leslie Ferguson was contacted via telephone on March 29 and April 2, 2007.
- Napa County Resource Conservation District (RCD) – David Steiner participated in a meeting at project site on April 16, 2007. Concerns included features of the ECP.
- California Department of Transportation (Caltrans) –Sandy Finegan was contacted via telephone on March 29, 2007.
- California Department of Forestry and Fire Protection (CDF), Sonoma-Lake-Napa Unit – Frank Kemper was contacted via telephone on March 29 and April 5, 2007.
- City of Napa, Public Works Department – Megan Thomas was contacted via telephone on March 29, 2007. Concerns included Milliken Reservoir and water quality and sedimentation impacts to the reservoir.

## 1.4 CEQA EIR PROCESS

### 1.4.1 PUBLIC REVIEW

This document is being circulated to local, state and federal agencies and to interested organizations and individuals who wish to review and comment on the report. Publication of this EIR marks the beginning of a 45-day public review period, during which written comments may be submitted to Napa County at the following address (including e-mail):

Napa County Conservation, Development and Planning Department  
Attn: Brian Bordona  
1195 Third Street, Suite 210  
Napa, CA 94599-3092  
Email: [bbordona@co.napa.ca.us](mailto:bbordona@co.napa.ca.us)

Although Napa County will accept e-mail comments, pursuant to CEQA Section 20191 (d)(3)(A), reviewers are encouraged to follow up any e-mail with letters.

In accordance with CEQA *Guidelines* Section 15204 (a), the focus of review should be on the sufficiency of this EIR in identifying and analyzing the possible impacts on the environment and ways in which the significant effects of the project might be avoided or mitigated.

## 1.4.2 FINAL EIR PUBLICATION

Written comments received in response to the Draft EIR will be addressed in a Response to Comments document, which together with any revisions to the Draft EIR text will constitute the Final EIR. Napa County will then review the proposed project, the EIR, and public testimony to decide whether to certify the EIR and approve the project (CEQA, 2006:Section 15090). Before approving the project, Napa County must make written findings with respect to each significant environmental effect identified in the EIR in accordance with Section 15091 of CEQA *Guidelines*. Within five working days following project approval, Napa County shall file a Notice of Determination (NOD) with the SCH and the county clerk in accordance with CEQA *Guidelines* Section 15094.

## 1.4.3 MITIGATION MONITORING AND REPORTING

Section 21081.6 of the State Public Resources Code requires lead agencies to adopt a Mitigation Monitoring and Reporting Program (MMRP) for the changes to the project which it has adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment. The MMRP is not required to be included in the Draft EIR; however, mitigation measures have been clearly identified and presented in language that will facilitate the establishment of the MMRP. Any mitigation measures adopted by Napa County as conditions of approval for the project will be included in a MMRP to verify compliance. The MMRP will also identify the responsible parties for implementing and for monitoring each mitigation measure.

## 1.5 TERMINOLOGY USED IN THE EIR

This Draft EIR uses the following terminology to describe environmental effects of the proposed project and alternatives:

- **Significance Criteria:** A set of criteria used by the lead agency to determine at what level or “threshold” an impact would be considered significant. Significance criteria used in this EIR include factual or scientific information; regulatory standards of local, state, and federal agencies; and/or guiding and implementing goals and policies identified in local plans.
- **Less Than Significant Impact:** A less than significant impact would cause no substantial change in the environment (no mitigation required).
- **Potentially Significant Impact:** A potentially significant impact may cause a substantial change in the environment; however, additional information is needed regarding the extent of the impact. For CEQA purposes, a potentially significant impact is treated as if it were a significant impact.



- **Significant Impact:** A significant impact would cause a substantial adverse change in the physical conditions of the environment. Significant impacts are identified by the evaluation of project effects using specified significance criteria. Mitigation measures and/or project alternatives are identified to reduce project effects to the environment.
- **Significant and Unavoidable Impact:** A significant and unavoidable impact would result in a substantial change in the environment that cannot be avoided or mitigated to a less than significant level if the project is implemented.
- **Cumulative Significant Impact:** A cumulative significant impact would result in a substantial change in the environment if two or more individual effects are considerable when considered together, or if the effects compound or increase other environmental impacts. From the California Code of Regulations Section 15355 “(a) The individual effects may be changes resulting from a single project or a number of separate projects. (b) The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.”

The Draft EIR also identifies mitigation measures and environmental commitments. Environmental commitments are commitments proposed by the Applicant that serve to reduce, avoid or eliminate impacts of the proposed project. Environmental commitments are proactively included as part of the proposed project or derived as a result of a planning process taking place prior to the preparation of the EIR. Mitigation includes measures that:

- Avoid the impact altogether by not taking a certain action or parts of an action;
- Minimize impacts by limiting the degree or magnitude of the action and its implementation;
- Rectify the impact by repairing, rehabilitating, or restoring the affected environment;
- Reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action; and
- Compensate for the impact by replacing or providing substitute resources or environments.

## 1.6 EIR ORGANIZATION

This Draft EIR is organized into eight chapters as described below.

1. **Introduction: Chapter 1.0** describes the purpose and organization of the EIR and the EIR preparation, review and certification processes. This chapter also describes subsequent development and approvals for which this EIR may be used.

2. **Executive Summary: Chapter 2.0** provides a summary of the proposed project, unavoidable environmental impacts that would result from project implementation, a summary of project alternatives, and the potential areas of controversy. This chapter also includes a table summarizing the impacts of the proposed project and mitigation measures that have been identified.
3. **Project Description: Chapter 3.0** describes the project location and vicinity, outlines project objectives, and summarizes components of the proposed project, pursuant to CEQA *Guidelines* Section 15124.
4. **Environmental Setting, Impacts and Mitigation Measures:** For each environmental issue area in **Chapter 4.0**, the existing environmental setting is described, the environmental impacts associated with project construction and operation are discussed, and mitigation measures for the impacts of the proposed project are identified, pursuant to CEQA *Guidelines* Sections 15125, and 15126.
5. **Alternatives to the Proposed Project: Chapter 5.0** describes alternatives to #P06-0042-ECPA that were considered, including the No Project Alternative, which is required by CEQA for all EIRs.
6. **Other CEQA-required Sections: Chapter 6.0** discusses the following:
  - Growth-inducing impacts (i.e. the potential for the proposed project to induce urban growth and development, pursuant to CEQA *Guidelines* Section 15126(d));
  - Cumulative impacts (i.e. the potential for the proposed project to result in cumulative impacts, pursuant to CEQA *Guidelines* Section 15130);
  - Significant unavoidable adverse impacts of the proposed project and project alternatives, pursuant to CEQA *Guidelines* 15126(b);
  - Potential indirect impacts that may result from the proposed project, pursuant to CEQA *Guidelines* 15126.4 (a)(1)(D), 15358 (a)(2) and 15064 (d); and
  - Significant irreversible environmental changes related to the implementation of the proposed project and project alternatives, pursuant to CEQA *Guidelines* Sections 15126.2 (c) and 15127.
7. **Report Preparation: Chapter 7.0** provides the names of the EIR authors and consultants, pursuant to CEQA *Guidelines* 15129.
8. **Appendices: Chapter 8** contains the appendices referenced in the EIR.

## 1.7 INTENDED USES OF THE EIR

The Napa County Conservation, Development and Planning Department has the primary authority for approval of #P06-01508-ECPA. In addition, activities associated with the installation of the project may also affect the following responsible and trustee agencies, subsequently requiring consultation, approval, and permits from the agencies.

- USACE – Section 404 of the Clean Water Act requires the issuance of a permit before discharging fill into the waters of the U.S., including wetlands.
- USFWS – Pursuant to the requirements of the Federal Endangered Species Act (FESA) of 1973 (16 USC Section 1531 *et seq.*), an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed species may be present in the project area and determine whether the proposed project will have a potentially significant impact upon such species.
- CDFG – Sections 1601-1603 of the Fish and Game Code require a Streambed Alteration Agreement before any action is taken that would obstruct or divert the flow or alter the channel of designated drainages, rivers, streams, and lakes. Also, pursuant to requirements of the California Endangered Species Act (CESA) of 1970 (Fish and Game Code Section 2050 *et seq.*, and CCR Title 14, Subsection 670.2, 670.51), an agency reviewing a proposed project within its jurisdiction must determine whether any state listed species may be present in the project area and determine whether the proposed project will have a potentially significant impact upon such species. An environmental filing fee required pursuant to Fish and Game Code Section 711.4(d) must be paid to the Napa County Clerk on or before the filing of the Notice of Determination for the project.
- Napa County RCD – The RCD will review the technical adequacy of the erosion and sediment control measures proposed in #P06-01508-ECPA.

## 1.8 EFFECTS NOT FOUND TO BE SIGNIFICANT

CEQA *Guidelines* Section 15128 states that an “EIR shall contain a statement briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detail in the EIR.” The following environmental issues were identified in the Initial Study as being less than significant and therefore are not evaluated in this EIR: Aesthetics, Agricultural Resources, Land Use and Planning, Mineral Resources, Noise, Population and Housing, Public Services, Recreation, and Utilities and Service Systems (**Appendix A**; AES, 2007). Transportation and Traffic was discussed in the Initial Study and it was stated that the proposed project would not generate a substantial or continuous increase in traffic. However, the issue is evaluated further in this EIR based on public comment received during the notice period. The proposed project would result in either no impact or a less than significant impact to these issue areas for the following reasons:

- **Aesthetics:** The proposed project is not located on or near a scenic vista or within a state scenic highway, and would not adversely affect day or nighttime views. The proposed project is considered agricultural in nature, located within an agricultural area, and is compatible with surrounding land uses. Impacts to aesthetics are considered less than significant.

- **Agricultural Resources:** The proposed project would not convert agricultural land to non-agricultural use. No impact would occur.
- **Land Use and Planning:** The proposed project is consistent with the Napa County General Plan and zoning designations for the property. Stream setbacks are proposed consistent with Napa County stream setback requirements, based on slope; setbacks of 20 feet would be maintained around drainages that do not meet Napa County's definition of a stream; and 50-foot minimum setbacks would be maintained around all wetlands. Approximately 0.9 acres of non-contiguous areas within the interior of the proposed vineyard blocks have slopes greater than or equal to 30 percent. There are no Habitat Conservation Plans or Natural Community Conservation Plans for the property or adjoining parcels and the proposed project would not physically divide an established community. Impacts to land use and planning are considered less than significant.
- **Mineral Resources:** Mineral resources have not been identified within the project site, according to Napa County Resource Maps. No impact would occur.
- **Noise:** The proposed project would result in seasonal and temporary noise generation related to construction and maintenance activities of the vineyard. At the project site, construction activities would require the use of heavy equipment. If needed, blasting would only occur from April 1 to September 1, Monday through Saturday from 8 A.M. to 6 P.M. If applicable, permits would be obtained from Napa County for blasting activities. During operation, work is typically conducted within the hours of 7 A.M. and 4 P.M., but would also include occasional nighttime activities including nighttime harvest (typically from 12 A.M. to 7 A.M.) about two months out of the year, sulfur/pesticide/herbicide application (typically from 10 P.M. to 7 A.M.) during one to one and a half months of the year, and frost protection with wind machines (typically from 12 A.M. to 7 A.M.) about 15 days out of the year. There are six residences located on the project site that are expected to be occupied by up to six onsite operation personnel with development of the proposed project, and scattered residences in the vicinity of the holding, including one residence approximately 300 feet southeast of proposed Block 30 and another approximately 700 feet northeast of proposed Block 3A. Given the scale of the proposed project and the existing rural and agricultural nature of the project area, the proposed project would not expose sensitive receptors to substantial noise. Impacts to noise are considered less than significant.
- **Population and Housing:** The proposed project does not involve the construction of new homes or businesses. Proposed roads would be used for vineyard operations and fire equipment access to the project site. The proposed project would not induce substantial population growth either directly or indirectly or create a significant need for additional housing. No residences or people would be displaced by the proposed project. Impacts to population and housing are considered less than significant.

- **Public Services:** The proposed project would not result in substantial growth that would require additional public services. The proposed project would not adversely impact the County's ability to provide fire and police protection, or impact the maintenance of schools, parks, or other public facilities. No impact would occur.
- **Recreation:** The proposed project would not result in substantial population growth or the associated increased use of recreational facilities, and does not include the construction or expansion of recreational facilities. The proposed project would also not adversely impact recreational opportunities or prohibit the maintenance of existing recreational opportunities. No impact would occur.
- **Utilities and Service Systems:** The proposed project would not exceed water treatment requirements or result in the construction of new water or wastewater treatment facilities. The proposed project would rely on groundwater from four existing and up to four proposed wells on the property, as well as an existing 131 acre-foot reservoir, to irrigate the proposed vineyard. Aside from the four new wells, the proposed project would not require additional water supplies, such as connection to public water supply. Onsite workers would generate a minimum amount of construction waste and solid waste, however, a less than significant impact is expected to the landfill capacity in the area. The proposed project would not conflict with any statutes or regulations related to solid waste. Impacts to utilities and service systems are considered less than significant.

## REFERENCES

AES, 2007. *Circle S Ranch Erosion Control Plan Application No. P06-01508-ECPA Initial Study*. Prepared by Analytical Environmental Services for Napa County Conservation, Development and Planning Department. July 2007.

CEQA, 2006. *California Environmental Quality Act (CEQA) Guidelines 2006*. Public Resources Code, Sections 21000-21178 and California Code of Regulations, Sections 15000-15387. Produced by Consulting Engineers and Land Surveyors of California. 2005.

Napa County, 2004. *Napa County's Local Procedures for Implementing the California Environmental Quality Act*. Napa County Conservation, Development and Planning Department. December 2004. Available online at <http://www.co.napa.ca.us/gov/departments/29000/linked/ceqa5.pdf>.

Napa County, 2005. *Napa County Code 2005*. Available online at [http://www.co.napa.ca.us/search/Code\\_Search.asp?LID=495](http://www.co.napa.ca.us/search/Code_Search.asp?LID=495).

Napa County, 2008. *Napa County General Plan*. June 2008. Available online at  
<http://www.co.napa.ca.us/GOV/Departments/DeptDocs.asp?DID=8&T=68&V=0&od=0>.

# CHAPTER 2.0

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## EXECUTIVE SUMMARY

### 2.1 INTRODUCTION

This Environmental Impact Report (EIR) assesses the potential environmental impacts of the Circle S Ranch #P06-01508-Erosion Control Plan Application (ECPA) project. This document has been prepared in accordance with the California Environmental Quality Act (CEQA) statutes and *Guidelines*. Napa County Conservation, Development and Planning Department (Napa County) is the lead agency for this CEQA process. Inquiries about the project and the CEQA process should be directed to:

Napa County Conservation Development and Planning Department  
Attn: Brian Bordona  
1195 Third Street, Suite 210  
Napa, CA 94599-3092  
Email: [bbordona@co.napa.ca.us](mailto:bbordona@co.napa.ca.us)

### 2.2 PROJECT DESCRIPTION

The purpose of #P06-01508-ECPA is to develop approximately 337 acres of new vineyard within 411 gross acres. In addition, approximately 41 acres of vineyard would be developed within 48 gross acres on slopes less than five percent. This includes vegetation removal and earthmoving and grading activities associated with soil cultivation, installation and maintenance of drainage and erosion control features, and vineyard planting.

#### 2.2.1 EROSION CONTROL MEASURES

Temporary and permanent erosion control measures are proposed as a part of #P06-01508-ECPA for the proposed vineyard areas. These measures would be maintained regularly to function as intended. They are summarized below and are described in more detail in **Chapter 3.0**.

- Straw wattles would be installed by September 15 of the year of construction to help prevent sediment from leaving developed areas (**Figure 3-9**);
- A filter strip would be installed along proposed Block 13 by increasing vegetation cover from seeding the area with a mixture of native perennial grasses. The filter strip shall be irrigated prior to September 15 the year of establishment.;
- A diversion ditch would be repaired along proposed Block 8 and gulying would be repaired at several locations (**Figure 3-9**). Banks shall be graded back to a 2:1 or gentler slope. The bottom of the diversion ditch shall be rock lined with clean fieldstone to prevent further erosion;
- Eroding cut slopes shall be graded back to a 1:1 or flatter slope and an erosion control blanket shall be installed (**Figure 3-8**);
- Culverts would be installed at five locations, and shall be aligned with the natural stream channel and set 1- to 2-inches below original stream grade (**Figure 3-8**). Care shall be taken to not disturb the stream channel, bank and surrounding area any more than is necessary from culvert installation and road construction;
- All existing and proposed year-round roads, except for the existing paved driveway, would be outsloped (**Figure 3-8**). Crushed rock shall be placed such that the natural flow direction of drainage is not changed;
- At several locations along existing roads rolling dips would be constructed (**Figure 3-8**). For roads on moderate to steep slopes (Type A) excavation into the existing road bed shall begin approximately 20 to 25 feet uphill from the rolling dip location, progressively steepening the grade until the axis is reached. For roads on gradual slopes (Type C) similar rolling dips would be constructed, but the reverse grade portion of the dip shall be 15 to 20 feet, with another 15 to 20 feet of slope to reach the existing road surface. For roads that are relatively flat (Type B), excavation into the existing road bed shall begin approximately 55 feet uphill from the rolling dip location, and the reverse grade would be similar to the Type C rolling dip.
- Two new rocked water crossings would be constructed (**Figure 3-8**). Care shall be taken not to disturb channel, bank and surrounding areas any more than is necessary;
- The existing reservoir spillway would be repaired (Figure in ECP; **Appendix B**). Actively eroding banks shall be supported with mortared rock walls on the upstream section of the spillway. The downstream section of the spillway will be reconfigured to prevent further erosion of the spillway banks as well as the bank of the stream into which it flows. The 90 degree turn in the spillway shall be protected from further erosion by grading the banks to 2:1 slope where necessary. Three leaning trees will be removed as a result of the construction. A portion of the bank shall be removed to create a larger area for flows, which will slow the velocity before the flow reaches the stream into which it empties. The bottom of channel shall be rock-lined with clean field stone to aid in slowing the flow;



All disturbed areas would be seeded with a permanent no-till cover crop and straw mulch, which would be applied to all disturbed areas. The permanent, no-till cover crop would be managed each year such that any areas that have less than 75 percent vegetation cover would be reseeded and mulched until adequate coverage is achieved. Cover crop for proposed Blocks 11, 12A, 12B, 12C and 15 would be managed each year to 80 percent vegetative cover to control erosion. These blocks were identified as requiring a slightly greater vegetation cover to control erosion, based on the Universal Soil Loss Equation (USLE) calculations.

Temporary erosion control measures shall include straw wattles, waterbars, rolling dips, straw mulch and other practices as needed. The measures shall be maintained in a functional condition throughout the rainy season. Waterbars shall not be constructed such that they direct water onto adjacent properties. Maintenance of the erosion control measures so they function as intended, and maintenance of the measures throughout the rainy season from September 15 through April 1.

### **2.3 ALTERNATIVES TO THE PROPOSED PROJECT**

CEQA *Guidelines* require EIRs to describe and evaluate a range of reasonable alternatives to a project, or to the location of a project, which would feasibly attain most of the basic project objectives and avoid or substantially lessen significant project impacts. Although there are no significant unmitigable project impacts identified, **Chapter 5.0** evaluates the potential alternatives to the proposed project. This chapter also includes a description of alternatives withdrawn from further consideration. Potential alternatives examined for the proposed project in this EIR include the No Project Alternative, Reduced Intensity Alternative, and a Phased Alternative. With the No Project Alternative, the project site would continue to operate as a cattle ranch and the approximately 27 acres of existing vineyards on the project site would continue to be operated and maintained. With Reduced Intensity Alternative, less vineyard acreage would be developed by avoiding 52 acres included in the proposed project. Proposed vineyard acreage would be reduced from approximately 459 gross acres to approximately 407 gross acres. These areas would remain in their current state, thereby preserving vegetation in these areas. The Phased Alternative is similar to the proposed project (with the development of approximately 378 acres of vineyard within 459 gross acres), with the exception that the length of construction time under the Phased Alternative would be spread out over six additional years.

## 2.4 SUMMARY OF ENVIRONMENTAL IMPACTS

**Table 2-1** presents a summary of project impacts and proposed mitigation measures that would further avoid or minimize potential project-related impacts. In the table, the level of significance of each environmental impact is indicated both before and after the application of the recommended mitigation measure(s). Refer to the environmental analysis sections in **Chapter 4.0** for detailed discussions of all project impacts and mitigation measures.

**TABLE 2-1**  
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
<b>4.1 Air Quality</b>			
<b>4.1-1:</b> Earthmoving and vegetation burning activities associated with implementation of the proposed project would have the potential to cause nuisance related to fugitive dust and other emissions.	Potentially Significant	<p><b>4.4-1:</b> The owner shall implement a fugitive dust abatement program during the construction of #P06-01508-ECPA, which shall include the following elements:</p> <ul style="list-style-type: none"> <li>• Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard.</li> <li>• Cover all exposed stockpiles.</li> <li>• Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent streets.</li> <li>• Limit traffic speeds on unpaved roads to 15 miles per hour (mph).</li> <li>• Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.</li> <li>• Any burning of cleared vegetation shall be conducted according to the rules and regulations of the BAAQMD's Regulation 5 (BAAQMD, 2006). Prior notification to BAAQMD shall be made by submitting an Open Burning Prior Notification Form to BAAQMD's office in San Francisco.</li> </ul> <p>The mitigation measure discussed above is in addition to the permanent erosion control measures specified in #P06-01508-ECPA, which includes: establishing a permanent no till cover crop on all disturbed areas and applying straw mulch over disturbed areas.</p>	Less than Significant
<b>4.1-2:</b> Operation of the proposed project would attract additional vehicles to the project site, resulting in new regional emissions.	Less than Significant	<b>4.1-2:</b> No mitigation is required.	Not Applicable
<b>4.1-3:</b> The proposed project would slightly increase traffic volumes and congestion levels on local roadways, resulting in changes to CO concentrations.	Less than Significant	<b>4.1-3:</b> No mitigation is required.	Not Applicable
<b>4.1-4:</b> Project emissions have the potential to cause distress to sensitive receptors.	Less than Significant	<b>4.1-4:</b> No mitigation is required.	Not Applicable

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
4.1-5: Project operation could result in operational odors.	Less than Significant	4.1-5: No mitigation is required.	Not Applicable
<b>4.2 Biological Resources</b>			
4.2-1: Development of the proposed project would convert to vineyard grassland vegetation and potentially conflict with Napa County Policy CON-17 that preserves and protects native grasslands.	Potentially Significant	<p>4.2-1: Selected livestock grazing may occur within protected grassland areas and replanted areas for weed management, fire prevention and to reduce competition by weeds within the proposed vineyard blocks when vineyard management deems it necessary and beneficial. When livestock are grazed outside of vineyard areas, temporary fencing shall be utilized to prevent livestock access to vernal pools, wetlands, Milliken Creek and its tributaries. The fencing shall be field verified by Napa County. Circle S Ranch shall consult with Napa County Resource Conservation District to ensure the property is not overgrazed outside the vineyard blocks.</p> <p>In concert with a grazing management plan invasive plant species that out-compete surrounding vegetation, for example by occurring at densities of over 80 percent, should be controlled to improve grassland quality and biodiversity. As such, and consistent with Policies CON-1 and CON-17, a noxious weed management plan shall be implemented to control infestations of noxious weeds onsite as needed. Such management would reduce noxious weed invasions and improve overall habitat quality and biodiversity. An example of a measurable goal for improving overall quality of grasslands on the site could include, but is not limited to, reducing Medusa-head grass and star thistle (noxious weeds) to less than 15 percent cover (or better). Control of such weeds would have the added benefit of improving overall forage quality for livestock.</p> <p>Target noxious weeds may be managed by hand-pulling or local application of herbicide with a backpack sprayer. Selective control of noxious weeds like Medusa-head grass, star thistle and others that may invade in the future should be employed using BMPs to minimize soil erosion, water contamination and other non-target herbicide effects. Spraying should be limited to dry days after the rainy season (May or June) but before target weeds are flowering to prevent seed production (May through September), depending on the species.</p>	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
<b>4.2-2:</b> Development of the proposed project would convert to vineyard approximately 0.9 acre (4.9 percent) of the almost 19 acres of the Chamise Alliance known to occur within the project site.	Less than Significant	<b>4.2-2:</b> No mitigation is required.	Not Applicable
<b>4.2-3:</b> Development of the proposed project would convert a little less than an acre, 8.4 percent of the 10.5 acres on the project site, of Mixed Manzanita - (Interior Live Oak - California Bay - Chamise) West County NFD Alliance to vineyard.	Less than Significant	<b>4.2-3:</b> No mitigation is required.	Not Applicable
<b>4.2-4:</b> Development of the proposed project would convert some rock outcrops that may constitute potentially significant resources in several different vegetation types to vineyard, which may conflict with Napa County Goal CON-2 and Policy CON-17.	Potentially Significant	<p><b>4.2-4:</b> Prior to approval of #P06-01508-ECPA, the plan shall be modified to include the following (any associated project features that become unnecessary as a result of the avoidance, such as proposed roads, shall also be reflected in the revised in the plan):</p> <p>The extensive rock outcrop on the Foss Valley floor in the southern portion of proposed Block 2C shall be avoided and a buffer of 50 feet around the outcrop shall be maintained throughout construction and operation of the proposed project.</p> <p>A qualified biologist shall place orange construction fencing along the outer edge of the buffer before earthmoving activities begin, the fencing shall be field verified by Napa County, and the biologist shall return at appropriate intervals during construction to ensure that the fencing and buffer are being maintained. With this mitigation, the proposed project would avoid potential direct, indirect and cumulative impacts to the outcrop in proposed Block 2C. The impacts would be considered less-than-significant.</p> <p>No mitigation would be necessary for the fractured volcanic outcrop in portions of Blocks 10A and 10B as described above because there are no unique floristic or habitat features of this fractured volcanic outcrop that distinguish it from the Upland Annual Grasslands and Forbs Formation or the non-serpentine chaparral.</p>	Less than Significant
<b>4.2-5:</b> Development of the proposed project could result in impacts to wetlands or waters of the U.S. and may be inconsistent with Policies CON-26, CON-30 and CON-42.	Potentially Significant	<b>4.2-5:</b> Prior to approval of #P06-01508-ECPA, the plan shall be modified to include the following (any associated project features that become unnecessary as a result of the avoidance, such as proposed roads, shall also be reflected in the revised in the plan):	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		<p>Project site plans shall be modified to avoid or minimize direct impacts to jurisdictional waters of the U.S. A Department of the Army nationwide permit (Section 401 permit) shall be obtained from the USACE prior to the discharge of any dredged or fill material within jurisdictional wetlands and other waters of the U.S. A Streambed Alteration Agreement (SAA) shall be obtained from CDFG prior to construction activities that impact riparian zones. Unavoidable impacts to waters of the U.S. shall be mitigated by creating or restoring waters of the U.S. onsite. Compensatory mitigation shall occur at a minimum of 1:1 ratio and shall be approved by the USACE prior to any discharge into jurisdictional features and by CDFG prior to impacting the riparian zone.</p> <p>To avoid indirect impacts to waters of the U.S. and wetlands, in addition to <b>Mitigation Measure 4.2-4</b>, avoidance buffers of 50 feet shall be established around each of the wetlands. Temporary orange construction fencing shall be installed around wetlands and any drainage features in the vicinity of and outside of the construction area. Fencing shall be located a minimum of 50 feet from the edges of wetlands and stream corridors as identified by a qualified biologist. All fencing shall be installed prior to the commencement of any earthmoving activities and shall be field verified by Napa County. The fencing shall remain in place until all construction activities in the vicinity have been completed.</p> <p>Construction activities in the within 50 feet of any USACE jurisdictional features shall be conducted during the dry season to minimize impacts related to erosion, water quality and aquatic resources and activities shall be conducted consistent to <b>Mitigation Measure 4.2-13</b> to protect western pond turtle. All disturbed areas shall be seeded and mulched to prevent erosion and sediment deposit into wetlands and waters of the U.S.</p> <p>Staging areas shall be located away from the areas of wetland habitat that are fenced off. Temporary stockpiling of excavated or imported material shall occur only in approved construction staging areas within the gross acres allocated for vineyard development (i.e., approved vineyard blocks and associated acreage). Excess excavated soil shall be used on site or disposed of at a regional landfill or other appropriate facility.</p>	

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
<p><b>4.2-6:</b> Development of the proposed project would convert Northern Vernal Pools and swales, considered sensitive habitat by CDFG and Napa County, to vineyard.</p>	<p>Potentially Significant</p>	<p>Stockpiles that are to remain on the site through the wet season shall be protected to prevent erosion (e.g. with tarps, silt fences, or straw bales).</p> <p>Standard precautions shall be employed by the construction contractor to prevent the accidental release of fuel, oil, lubricant, or other hazardous materials associated with construction activities into jurisdictional features. A contaminant program shall be developed and implemented in the event of release of hazardous materials (as detailed in <b>Mitigation Measure 4.5-1</b>).</p> <p><b>4.2-6</b> Prior to approval of #P06-01508-ECPA, the plan shall be modified to include the following (any associated project features that become unnecessary as a result of the avoidance, such as proposed roads, shall also be reflected in the revised in the plan):</p> <p>The Applicant shall permanently avoid the Northern Vernal Pools and swales located in and around proposed Block 2C. Construction activities are not anticipated to encroach in this area with the Implementation of <b>Mitigation Measure 4.2-4</b>, however, temporary orange construction fencing shall be installed around the features. Fencing shall be located a minimum of 50 feet from the edges of the features as identified by a qualified biologist. All fencing shall be installed prior to the commencement of any earthmoving activities and shall be field verified by Napa County. The fencing shall remain in place until all construction activities in the vicinity have been completed.</p>	<p>Less than Significant</p>

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
<p><b>4.2-7:</b> Development of the proposed project could interfere with existing wildlife movement area corridors and conflict with General Plan Policy CON-18 which relates to wildlife movement</p>	<p>Potentially Significant</p>	<p><b>4.2-7:</b> Prior to approval of #P06-01508-ECPA, the plan shall be modified to include the following (any associated project features that become unnecessary as a result of the avoidance, such as proposed roads, shall also be reflected in the revised in the plan):</p> <p>To minimize restricted wildlife movement through the proposed placement of wildlife exclusion fencing and vineyard development, the proposed vineyard blocks shall be fenced individually or in small clusters, with corridors of no less than 100 feet in width between fenced areas to permit greater movement through the project site and across Foss Valley. In addition, critter culverts shall be installed at a minimum in the areas designated in <b>Figure 4.2-8</b> to provide access through the vineyard blocks. The southern portion of Block 2C should be avoided altogether to avoid sensitive habitats (see <b>Impact and Mitigation Measures 4.2-4</b> and <b>4.2-6</b>). The fencing design would result in the removal of approximately 5.7 acres of proposed vineyard areas from the project, as shown in <b>Figure 4.2-8</b>.</p> <p>The following fencing design takes into consideration the wildlife that occurs on Circle S Ranch and is recommended to minimize impact on the movement of wildlife across the landscape and maintain consistency with General Plan Policy CON-18:</p> <p><b>Single Vineyard Block Units:</b></p> <ul style="list-style-type: none"> <li>• 4</li> <li>• 5</li> <li>•</li> <li>• 8</li> <li>• 9</li> <li>• 11</li> <li>• 26</li> <li>• 35</li> </ul>	<p>Less than Significant</p>



Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
<b>Vineyard Block Clusters:</b>			
<ul style="list-style-type: none"> <li>• 1A, 1B</li> <li>• 2A, 2B and 2C (modified to avoid vernal pools, swales and rock outcrop as described in <b>Impact</b> and <b>Mitigation Measures 4.2-4</b> and <b>4.2-6</b>)</li> <li>• 3A, 3B</li> <li>• 6A, 6B, 6C, 6D</li> <li>• 10A, 10B</li> <li>• 12A, 12B, 12C, 15 and 16</li> <li>• 13, 14</li> <li>• 17A, 17B and 18</li> <li>• 19, 20</li> <li>• 21, 22, 24, 25B and 25C</li> <li>• 23, 25A, 32</li> <li>• 27, 28, 29 and 30</li> <li>• 33, 34</li> </ul>			
<p>In addition, streams and drainages with minimum 100 foot corridors (total width) shall be delineated as “Wildlife Movement Corridors” and preserved in perpetuity as open space and wildlife habitat via a deed restriction in a form acceptable to Napa County Counsel. All drainages and immediately adjacent vegetation buffers shall be left unfenced and open to wildlife use and movement. Corridors should be restricted from development and other uses that would degrade the quality of the habitat (including, but not limited to conversion to other land uses such as agriculture or urban development, and excessive off-road vehicle use that increases erosion) and should be otherwise restricted by the existing goals and policies of Napa County. Standard adaptive management erosion control and fire management practices consistent with state and local regulations shall be observed in these areas as well.</p>			
<p><b>4.2-8:</b> Development of the proposed project would have the potential to affect populations of hollyleaf ceanothus (CNPS 1B) within the project area.</p>	<p>Less than Significant</p>	<p><b>4.2-8:</b> No mitigation is required.</p>	<p>Not Applicable</p>
<p><b>4.2-9:</b> Development of the proposed project would have the potential to affect habitat for special status plant species on the project site and could result in</p>	<p>Less than Significant</p>	<p><b>4.2-9:</b> No mitigation is required.</p>	<p>Not Applicable</p>

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
conflicts with Goal CON-2 that requires the maintenance and enhancement of existing levels of biodiversity.			
<b>4.2-10:</b> Development and operation of the proposed project would have the potential to affect special status amphibian species.	Less than Significant	<b>4.2-10:</b> No mitigation is required.	Not Applicable
<b>4.2-11:</b> Development of the proposed project would have the potential to affect American badger, a CDFG Species of Special Concern.	Potentially Significant	<p><b>4.2-11:</b> Pre-construction surveys for American badger must be performed by a qualified biologist prior to development of the vineyard blocks that occur in potential badger habitat. The Applicant shall implement the following measures to avoid disturbing any American badger:</p> <ol style="list-style-type: none"> <li>1. No more than two weeks before earthmoving activities begin, a survey for burrows and American badgers shall be conducted by a qualified biologist within 500 feet of construction activities.</li> <li>2. If occupied burrows are found during pre-construction surveys, the biologist would consult with CDFG to determine whether the construction activities would adversely disrupt breeding behaviors of the badger.</li> <li>3. If it is determined that construction activities would disrupt breeding behaviors, then avoidance between March through August may be the only mitigation available. Implementation of the project within 500 feet of occupied burrows during this time would be delayed until a qualified biologist can determine that juvenile badgers are self-sufficient enough to move from their natal burrow.</li> </ol>	Less than Significant
<b>4.2-12:</b> Development of the proposed project has the potential to affect valley elderberry longhorn beetles.	Less than Significant	<b>4.2-12:</b> No mitigation is required.	Not Applicable
<b>4.2-13:</b> Development of the project would have the potential to affect western pond turtles.	Potentially Significant	<p><b>4.2-13:</b> Prior to approval of #P06-01508-ECPA, the plan shall be modified to include the following (any associated project features that become unnecessary as a result of the avoidance, such as proposed roads, shall also be reflected in the revised in the plan):</p> <p>To protect prime upland nesting habitat a 100 foot buffer (30.5 meters) shall be maintained along identified water habitats surrounded by open grassland and agricultural areas. These areas include portions of Milliken Creek, and the northern and</p>	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		<p>middle tributaries running through the western portion of the site (<b>Figure 4.2-9</b>). A 275 foot buffer (84 meters), placed along water features that are surrounded by oak woodland shall be maintained to provide ample protection of overwintering habitats. Furthermore, open areas interspersed within this overwintering buffer will provide additional nesting habitat. These areas include the reservoir and surrounding drainages, portions of Milliken Creek, a portion of the middle tributary flowing south of Block 9, and a portion of the southernmost stream on site (<b>Figure 4.2-9</b>). Proposed Blocks 1B, 6C, 8, 10B, 13, 17B, 18, 25C, 26, 27, 29, 32, and a portion of the cleared area proposed between Blocks 9 and 10B for rock storage shall be modified to reflect these buffers, reducing their acreages by approximately 8.8 acres; the exact areas shall be staked and flagged in the field by a qualified biologist prior to construction and shall be field verified by Napa County.</p>	
		<p>Two weeks prior to the commencement of ground disturbing activities near aquatic habitats, a qualified biologist shall perform western pond turtle surveys within suitable aquatic habitat on the project site. If a pond turtle is located in an aquatic habitat during the nesting season (May to July), a subsequent survey of the surrounding upland habitats will be conducted to determine the suitability of the upland habitats for nesting and to examine the area for any evidence of turtle nesting activity. Ground disturbance within suitable nesting habitat would not proceed until the work area is surveyed and a recommendation made by a qualified biologist. Due to the western pond turtle's tendency to travel long distances and cross disturbed habitats, all construction and vineyard personnel on site shall be educated by a qualified biologist prior to commencement of development activities to identify and avoid western pond turtles. From May through July, a turtle exclusion fence shall be installed around all grading and construction activities within or bordering nesting habitat to prevent impacts. From October through March a turtle exclusion fence shall be installed around all activities within or bordering overwintering habitat to prevent impacts and the fencing shall be field verified by Napa County. The fence shall be constructed from silt fencing to avoid turtle injury and entrapment. A qualified biologist shall also be present during the activities to relocate any turtles that are found in proximity to or within construction areas.</p>	

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
<p><b>4.2-14:</b> Development of the proposed project would have the potential to affect special status bird species.</p>	<p>Potentially Significant</p>	<p><b>4.2-14a:</b> The Applicant shall implement the following measures to avoid disturbing any special status species nesting above ground. Vegetation removal conducted during the nesting period shall require a pre-construction survey for active bird nests, conducted by a qualified biologist. No known active nests shall be disturbed without a permit or other authorization from USFWS and/or CDFG.</p> <ol style="list-style-type: none"> <li>1. For earth-disturbing activities occurring during the breeding season (March 1 through September 1), a qualified biologist shall conduct pre-construction surveys of all potential nesting habitat for all birds within 500 feet of earthmoving activities.</li> <li>2. If active special status bird nests are found during pre-construction surveys 1) a 500-foot no-disturbance buffer will be created around active raptor nests during the breeding season or until it is determined that all young have fledged, and 2) a 250-foot buffer zone will be created around the nests of other special status birds and all other birds that are protected by California Fish and Game Code 3503. These buffer zones are consistent with CDFG avoidance guidelines and CDFG buffers required on other similar ECPA projects; however, they may be modified in coordination with CDFG based on existing conditions at the project site.</li> <li>3. If pre-construction surveys indicate that nests are inactive or potential habitat is unoccupied during the construction period, no further mitigation is required. Shrubs and trees that have been determined to be unoccupied by special status birds or that are located 500 feet from active nests may be removed.</li> <li>4. If vegetation removal activities are delayed or suspended for more than two weeks after the pre-construction survey, the areas shall be resurveyed.</li> </ol> <p><b>4.2-14b:</b> The Applicant shall implement the following measures to avoid disturbing any burrowing owls. No more than two weeks before earthmoving activities begin, a survey for burrows and burrowing owls shall be conducted by a qualified biologist within 500 feet of construction activities. The survey shall conform to protocol described by the California Burrowing Owl Consortium (1997), which includes up to four surveys on different dates if</p>	<p>Less than Significant</p>

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
<p><b>4.2-15:</b> Development of the proposed project would have the potential to affect special status bat species.</p>	<p>Potentially Significant</p>	<p>there are suitable burrows present. If occupied owl burrows are found during pre-construction surveys, CDFG will be consulted. Mitigation measures may include one or more of the following:</p> <ol style="list-style-type: none"> <li>1. A qualified biologist shall determine whether the construction activities will adversely disrupt breeding behaviors of the owl (within 500 feet of construction activities). If it is determined that construction activities would not disrupt breeding behaviors, construction may proceed without further restrictions.</li> <li>2. If it is determined that the project could adversely affect occupied burrows during the August 31 to February 1 non-breeding season, a qualified biologist may relocate the owl(s) from the occupied burrow(s) using one-way doors. There shall be at least two burrows suitable for the owls within 300 feet of the occupied burrow before one-way doors are installed. The unoccupied burrows shall be at least 160 feet away from construction activities and can be natural or artificially created according to current design specifications. Artificial burrows shall be installed at least one week before one-way doors are installed on occupied burrows. One-way doors shall be in place at least 48 hours before burrows are excavated.</li> <li>3. If it is determined that construction activities would disrupt breeding behaviors during the nesting season (February 1 to August 31), then avoidance is the only mitigation available (California Burrowing Owl Consortium 1997; CDFG 1995). Implementation of the project within 250 feet of occupied burrows during this time would be delayed until a qualified biologist can determine that the owls are no longer nesting or that juvenile owls are self-sufficient enough to move from their natal burrow.</li> </ol> <p><b>4.2-15:</b> Construction activities conducted during the breeding season shall require a pre-construction survey for active bat roosts, conducted by a qualified biologist. No known active bat roosts shall be disturbed without a permit or other authorization from USFWS and/or CDFG.</p> <ol style="list-style-type: none"> <li>1. For earth-disturbing activities occurring during the breeding season (March 1 through August 31), a qualified wildlife biologist shall conduct pre-construction surveys of all</li> </ol>	<p>Less than Significant</p>

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
4.2-16: Development of the proposed project would have the potential to affect special status aquatic species.	Less than Significant	<p>potential bat-roosting habitat for special status bats within 200 feet of earthmoving activities. Roosting habitat surveys shall focus on a) trees slated for removal that have loose bark, or holes/crevices in the trunk and b) rock piles slated for removal that contain crevices.</p> <ol style="list-style-type: none"> <li>2. If active special status bat roosts are found during pre-construction surveys, CDFG will be consulted. A no-disturbance buffer (acceptable in size to CDFG) will be created around active bat roosts during the breeding season or until it is determined that all young have fledged.</li> <li>3. If pre-construction surveys indicate that roosts are inactive or potential habitat is unoccupied during the construction period, no further mitigation is required. Trees that have been determined to be unoccupied by special status bats may be removed.</li> <li>4. If vegetation removal activities are delayed or suspended for more than two weeks after the pre-construction survey, the areas shall be resurveyed.</li> </ol>	Not Applicable
4.2-17: Development of the proposed project could result in conflicts with Napa County Code Section 18.108.027B.	Less than Significant	4.2-17: No mitigation is required.	Not Applicable
4.2-18: Development of the proposed project could result in conflicts with Napa County Code Section 18.108.025 (General provisions – Intermittent/perennial streams).	Less than Significant	4.2-18: No mitigation is required.	Not Applicable
4.2-19: Development of the proposed project could result in conflicts with the California Oak Woodlands Conservation Act (2001) and Napa County Code Section 18.108.100, and the General Plan Goals CON-2 and CON-6 and Policies CON-17 and CON-24.	Potentially Significant	<p>4.2-19: Prior to approval of #P06-01508-ECPA, the plan shall be modified to include the following (any associated project features that become unnecessary as a result of the avoidance, such as proposed roads, shall also be reflected in the revised in the plan):</p> <p>Impacts to oak woodland would be reduced to a less-than-significant level and result in the greatest quality of oak woodland mitigation through a combination of avoidance, preservation, and enhancement. Specifically, mitigation for the removal of the estimated 13,849 trees on approximately 289 acres would be</p>	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		<p>accomplished through a combination of 1) avoidance of oak woodlands of limited distribution within the project area and immediate vicinity; 2) preservation and conservation of oak woodlands having the highest habitat values and qualities at a 2:1 preservation-to-vineyard ratio on a per acre basis; and 3) through the restoration and enhancement of existing oak woodlands implemented by an oak woodland restoration plan.</p> <p><b>Avoidance</b>                      Approximately 1,188 acres are potentially available for vineyard conversion within the 1,593-acre holding. Originally a total of 730 acres at the Circle S Ranch were designated as potential sites for vineyard. After taking into consideration a number of environmental factors such as the loss of oak woodland habitat, the project was redesigned and reduced to approximately 459 gross acres; thereby avoiding 166 acres of trees among other natural resources (reference oak woodland section). The project avoids approximately 594 acres of oak woodland, or 68 percent of the oak woodland on the property. In addition, with the mitigation described above to maintain buffers from streams, wildlife corridors and western pond turtle habitat, the project would be reduced to preserve approximately 13 acres of oak woodland.</p> <p>Blue Oak Alliance is a vegetation type that is limited within the property and general vicinity. Approximately 18 acres of Blue Oak Alliance exists within the property. Approximately 12.84 acres (71 percent) are proposed for removal within portions of proposed Blocks 1A, 2A and 2B located at the northern property boundary. General Plan Policy CON-24 requires the maintenance and improvement of species diversity (among other things) as well as a mixture of oak species, including black, live, brewer oaks as well as blue, white, scrub and live oaks. Given that Blue Oak Alliance is limited within the property and a majority is proposed for removal, portions of the Blue Oak woodland shall be avoided. Specifically, proposed Blocks 1A and 2B shall be reconfigured to completely avoid the areas of the Blue Oak Alliance. Proposed Block 2A shall be reconfigured to avoid the majority of the Blue Oak Alliance (approximately 91.2 percent of Blue Oak Alliance is avoided on the property). In addition, given its limited local distribution, blue oaks shall be replanted at a 2:1 replacement ratio, as described in the Preservation and</p>	

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		<p>Enhancement section below.</p> <p>The significant large trees (as identified by Nix and discussed in the Biological Resources Assessment Addendum, dated August, 2008; <b>Appendix D</b>) located within proposed vineyard Blocks 17A and 18 shall be avoided. All preserved trees within 50 feet of ground-disturbing activities should be protected on the project site with visible orange fencing during all phases of construction activities. Visible orange fencing shall be placed at the edge of the dripline (edge of the tree canopy) to protect above- and below-ground tissues of these trees and shall be field verified by Napa County. The following shall not occur within the dripline of any retained tree: parking or storage of vehicles, machinery or other equipment; stockpiling of excavated soils, rocks or construction materials; or dumping of oils or other chemicals. A certified arborist shall perform any pruning deemed necessary. No more than 25 percent of a tree canopy of perimeter trees shall be removed by pruning of retained trees.</p> <p><b>Preservation and Enhancement</b>            Direct impacts to oak woodlands should be mitigated by preserving the majority of the remaining onsite oak woodlands at a 2:1 ratio on a per acre basis, as described below.</p> <p>There is sufficient acreage of oak woodland on the project site to provide for preservation at a 2:1 ratio. Approximately 556.04 acres of oak woodland preservation acres are needed and 870.67 acres of oak woodland occur on the project site (or 592.60 acres after development of the proposed project). The permanent protection of 556.04 acres is discussed below. As there is more oak woodland acreage available onsite than is required for preservation through a 2:1 ratio, acreage included in the preservation area should be selected in a manner to minimize fragmentation of the oak woodland on the project site. Minimizing fragmentation of oak woodlands increases their habitat value to birds and other wildlife by reducing negative edge effects. <b>Figure 4.2-10</b> depicts the oak woodland vegetation alliances that would be impacted through project development and highlights the remaining areas onsite available for conservation.</p> <p>To mitigate for development of oak woodland, a total of 556.04 (from <b>Table 4.2-4</b>) shall preserved in perpetuity. All acreage</p>	



Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		<p>designated for preservation shall be identified as such in a deed restriction, conservation easement with an organization such as the Land Trust of Napa County as the grantee, or other means of permanent protection. Land placed in protection shall be restricted from development and other uses that would degrade the quality of the habitat (including, but not limited to conversion to other land uses such as agriculture or urban development, and excessive off-road vehicle use that increases erosion) and should be otherwise restricted by the existing goals and policies of Napa County. Standard adaptive management erosion control and fire management practices shall be observed in these areas as well. For example, the ECP prepared for the proposed project identified approximately 520 acres on the project site as tree management areas (<b>Figure 3-12</b>); activities in these areas would be overseen by a Registered Professional Forester. The tree management plan shall include the planting of a minimum of 3.16 acres of blue oaks to mitigate impacts to Blue Oak Alliance to a less-than-significant level. The final locations subject to deed restriction shall be selected based on their ecological value and shall be identified in conjunction with the property owner and Napa County prior to any vegetation removal, grading and earthmoving activities. Documentation on the establishment of the preservation area in a form acceptable to the County shall be submitted to Napa County prior to any vegetation removal, grading and earthmoving activities.</p>	

**4.3 Cultural Resources**

**4.3-1:** Grading activities and planting of new vineyard within the boundaries of identified resources would negatively impact these cultural resources.

Potentially Significant

**4.3-1:** A total of 24 cultural resources have been identified within the Circle S Ranch project area. Sixteen of these resources have been evaluated and recommended eligible to the National and/or California Registers, while the eligibility status of the balance remains undetermined. As such, all cultural resources listed in **Table 4.3-2** are considered significant for management purposes and are treated accordingly. Therefore, all cultural resources listed in the above referenced table must be avoided by all ground disturbing activities during project implementation and operation with a permanent five meter (16 foot) buffer around the perimeter, with the exception of the rock walls (RF 1 through RF 12). The rock walls shall be avoided by all ground disturbing activities during project implementation and operation with a permanent 10 foot buffer around the perimeter (including vineyard avenues), with the exception of the nine areas identified

Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
<p><b>4.3-2:</b> Planting of new vineyard has the potential to negatively impact previously unknown cultural resources within the project area.</p>	Potentially Significant	<p>in <b>Figure 4.3-1</b> where rock walls would be opened. The openings shall be limited to 20 feet each and shall provide necessary access consistent with General Plan Policy CC-21. Erosion Control Plan P06-01508-ECPA shall be revised to avoid all resources prior to County approval. The Applicant shall install and maintain protective fencing along the outside of the buffer to ensure protection during construction.</p>	Less than Significant
<p><b>4.3-3:</b> Planting of new vineyard blocks could result in the discovery and disturbance of unknown human remains.</p>	Potentially Significant	<p><b>4.3-3:</b> In the event that human remains are discovered, the provisions of the California Health and Safety Code Section 7050.5 (b) shall be followed. The Napa County Coroner shall be contacted within 24 hours of the find. Upon recognizing the remains as being Native American in origin, the Coroner shall be responsible for contacting the Native American Heritage Commission (NAHC) within 24 hours. The NAHC has various powers and duties to provide for the ultimate disposition of any Native American remains, as does the assigned Most Likely Descendant (MLD).</p>	Less than Significant
<p><b>4.3-4:</b> Construction of proposed project components has the potential to destroy unknown, unique</p>	Potentially Significant	<p><b>4.3-4:</b> In the event that any paleontological resources are discovered during construction-related earth-moving activities, all</p>	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
paleontological and geological resources.	Significant	work within 50 feet of the resources shall be halted and a qualified paleontologist shall be consulted to assess the significance of the find. If any find is determined to be significant by the qualified professional, then appropriate agency and project representatives and the qualified paleontologist shall meet to determine the appropriate course of action. All significant cultural or paleontological materials recovered shall be subject to scientific analysis, professional museum curation, and a report prepared by the qualified paleontologist according to current professional standards.	Significant
<b>4.4 Geology and Soils</b>			
<b>4.4-1:</b> Development of the proposed project would alter the rate of sediment erosion and yield onsite.	Less than Significant	<b>4.4-1:</b> No mitigation is required	Not Applicable
<b>4.4-2:</b> Development of the proposed project would involve earthmoving activities that would alter the existing topographic and geologic conditions at the project site.	Less than Significant	<b>4.4-2:</b> No mitigation is required	Not Applicable
<b>4.5 Hazardous Materials</b>			
<b>4.5-1:</b> The proposed project would include the storage of hazardous materials above the minimum reportable quantities in the Hazardous Materials Business Plan (HMBP). There is potential for incidental AST leakage, rupture and spillage when fueling agricultural equipment, which could result in hazards to the public or environment. If substantial quantities of diesel or unleaded gasoline reach soil or drainage areas, surface and/or groundwater quality may be degraded.	Potentially Significant	<b>4.5-1:</b> Prior to the development of the proposed project, the owner of Circle S Ranch would prepare a HMBP for proposed hazardous materials onsite. If storage amount or use of hazardous materials change during project operation, the project owner shall update, as necessary, the HMBP. The HMBP should include: <ul style="list-style-type: none"> <li>• An inventory of the type and quantity of hazardous materials stored onsite;</li> <li>• A site map;</li> <li>• Risks of using the hazardous materials;</li> <li>• Spill prevention methods;</li> <li>• Emergency response plan;</li> <li>• Employee training; and</li> <li>• Emergency contacts.</li> </ul> The plan should also include a review of each chemical used	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
<p><b>4.5-2:</b> The proposed project has the potential to release hazardous materials into the environment during construction through the use of equipment.</p>	<p>Potentially Significant</p>	<p>onsite and a determination on whether any substitution for the chemicals (more eco-friendly) can be made; changes should be made as appropriate. The hazardous materials inventory, site map, emergency response plan, business owner form, and business activities form must be submitted to the DEM. If there is any change in storage of a hazardous material or 100 percent increase in quantity of a hazardous material the DEM must be notified within 30 days. An employee training record must be filed onsite and would be inspected by the DEM once every three years.</p> <p><b>4.5-2:</b> In addition to the erosion control measures that are outlined in Table 3-3, personnel shall follow written SOPs for filling and servicing construction equipment and vehicles. The SOPs, which are designed to reduce the potential for incidents involving hazardous materials, shall include:</p> <ul style="list-style-type: none"> <li>• Refueling shall be conducted only with approved pumps, hoses, and nozzles.</li> <li>• Catch-pans shall be placed under equipment to catch potential spills during servicing.</li> <li>• All disconnected hoses shall be placed in containers to collect residual fuel from the hose.</li> <li>• Vehicle engines shall be shut down during refueling.</li> <li>• No smoking, open flames, or welding shall be allowed in refueling or service areas.</li> <li>• Refueling and all construction work shall be performed outside of the stream buffer zones to prevent contamination of water in the event of a leak or spill.</li> <li>• Service trucks shall be provided with fire extinguishers and spill containment equipment, such as absorbents.</li> <li>• A spill containment kit that is recommended by the DEM or local fire department will be onsite and available to staff if a spill occurs.</li> </ul> <p>In the event that contaminated soil and/or groundwater or other hazardous materials are generated or encountered during construction, all work shall be halted in the affected area and the type and extent of the contamination shall be determined. Should a spill contaminate soil, the soil shall be put into containers and disposed of in accordance with federal, state, and local regulations. If containment and size of the spill is beyond the</p>	<p>Less than Significant</p>

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
<p><b>4.5-3:</b> The proposed project has the potential to release hazardous materials into the environment during operation and maintenance of the vineyard.</p>	<p>Potentially Significant</p>	<p>scope of the contractor, proper authorities shall be notified.</p> <p><b>4.5-3:</b> In addition to Mitigation Measures 4.5-1, 4.5-2, 4.5-4, and 4.5-5, a rinse water containment area should be established outside the proposed setbacks and away from any areas that could potentially drain off site or potentially affect surface and groundwater quality. When farm equipment is cleaned, only rinse water that is free of gasoline residues, pesticides and other chemicals, and waste oils should be allowed to diffuse back into the vineyard area. All other rinse water from farm equipment and rinse water from equipment used to apply chemicals such as pesticides, herbicides and fungicides should be collected and stored in containers that are of sufficient size to contain the water until a hazardous materials transporter can remove the rinse water. No rinse water shall be drained to a septic system or discharged to ground or surface water to prevent the release of hazardous materials into the environment during operation and maintenance of the proposed project.</p>	<p>Less than Significant</p>

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
<p><b>4.5-4:</b> The proposed project may include the use of pesticides for vineyard maintenance.</p>	<p>Potentially Significant</p>	<p><b>4.5-4:</b> Personnel shall follow SOPs when applying pesticides to the vineyard. SOPs for pesticide use, shall include the following:</p> <ul style="list-style-type: none"> <li>• Purchase only enough pesticide that would be used per season.</li> <li>• Utilize IPM techniques where feasible, such as the use of a permanent cover crop, beneficial insects, and minimal to no use of pesticides except when found necessary from monitoring and for fungicides.</li> <li>• All pesticides will be stored in their original containers. Labels on the containers will not be removed.</li> <li>• Pesticides will be kept in a well-ventilated locked area.</li> <li>• Pesticide storage areas will be 100 feet from any drainage area, stream, or groundwater well.</li> <li>• The best way to dispose of a small amount of pesticide is to use it. If a pesticide must be disposed of, contact the Napa County Agricultural Commissioner to locate a hazardous waste facility for proper disposal.</li> <li>• Pesticides will never be poured down the sink, toilet, or stream.</li> <li>• Proper personal protection equipment will be utilized when working with pesticides.</li> </ul>	<p>Less than Significant</p>
<p><b>4.5-5:</b> The current vineyard operations produce approximately 845 kilograms (0.93 tons) of waste oil per year. The proposed project would increase the annual amount of waste oil generated to approximately four tons (or approximately 400 gallons of oil). The waste oil would continue to be stored onsite and picked up regularly by a waste oil recycler with the proposed project. Improperly stored waste oil could cause significant impacts to the environment if not contained and disposed of properly.</p>	<p>Potentially Significant</p>	<p><b>4.5-5:</b> Waste oil containers should be stored in secondary containment that includes an oil-impervious bermed area or liner, retaining wall, and/or an impervious concrete floor. The waste oil containers should be covered during rain events and not be stored within the setbacks described in Impact 4.5-3 above. Waste oil containers should be labeled "waste oil". The containers should also be labeled with the following information: accumulation start date; the hazardous properties of the waste (i.e. flammable, corrosive, reactive, toxic, etc.); and the name and address of the facility generating the waste. All waste oil containers should be transported offsite by a licensed transporter and taken to a waste oil recycling facility.</p>	<p>Less than Significant</p>

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
<p><b>4.6: Hydrology and Water Quality</b></p> <p><b>4.6-1:</b> Development of the proposed project would alter the existing drainage pattern of the project site..</p>	Less than Significant	<b>4.6-1:</b> No mitigation is required.	Not Applicable
<p><b>4.6-2:</b> Development of the proposed project would alter the existing drainage pattern of the project site.</p>	Less than Significant	<b>4.6-2:</b> No mitigation is required.	Not Applicable
<p><b>4.6-3:</b> The proposed project would not be located in a FEMA flood zone, but would be located near one watercourse that was identified to be a flood hazard during field observations. Development of the proposed project would not exacerbate flooding or expose people or structures to a risk of loss.</p>	Less than Significant	<b>4.6-3:</b> No mitigation is required.	Not Applicable
<p><b>4.6-4:</b> The proposed project would require the use of local groundwater resources for irrigation purposes, which would alter local groundwater levels and local groundwater dynamics.</p>	Potentially Significant	<p><b>4.6-4:</b> The Applicant shall be required (at the Applicant's expense) to provide well monitoring data and analyses of the collected data from a qualified professional Geologist or a Certified Hydrogeologist on a seasonal basis to the County Conservation, Planning and Development Department. Such data shall include, but not be limited to, static water levels, pumping water levels, instantaneous flow rates and cumulative pumped volumes for each of the four existing onsite wells. These wells are each located in separate geographic areas of the project site (Figure 4.6-2), therefore, monitoring of these wells would help to provide data on groundwater conditions generally representative of the entire project site. Pumping rates and volumes shall be monitored by the use of a totalizer flow dial (or similar technology) and water levels shall be monitored by the use of an automatically recording pressure transducer (or similar technology). The automatic recorder shall be set to collect data approximately every 15 minutes for the first year to provide sufficient data for the purpose of operational monitoring; the frequency between data recording by the transducer may be increased in the future. These data shall be downloaded every 2 to 3 months. This will help to provide a quantity of data that is reasonable to review, as well as account for variations in seasonal groundwater conditions.</p>	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		Water usage shall be minimized by use of best available control technology and best management conservation practices. In the event that in the ECPA would significantly affect the groundwater basin, the Director of Environmental Management shall be authorized to require additional reasonable conditions on the Applicant, or revocation of this permit, as necessary to meet the requirements of the Napa County Groundwater Ordinance and protect public health, safety and welfare. Such additional mitigation might include shifting of groundwater production to other onsite wells for a period of time. That recommendation shall not become final unless and until the Director has provided notice and the opportunity for a hearing in compliance with County Code Section 13.15.070 (G)-(K).	
<p><b>4.7: Transportation and Traffic</b></p> <p><b>4.7-1:</b> Construction of the proposed project would temporarily increase traffic volumes on roadways in the area.</p>	Less than Significant	<b>4.7-1:</b> No mitigation is required.	Not Applicable
<p><b>4.7-2:</b> Operation of the proposed project would increase traffic volumes on roadways in the area.</p>	Less than Significant	<b>4.7-2:</b> No mitigation is required.	Not Applicable
<p><b>4.7-3:</b> Installation of the proposed project, and to a lesser extent subsequent vineyard activities, could increase potential conflicts between vehicles on area roads given the additional vehicles that would be entering and exiting the project site</p>	Less than Significant	<b>4.7-3:</b> No mitigation is required.	Not Applicable
<p><b>4.7-4:</b> Development and subsequent operation of the proposed project would increase wear-and-tear of area roads.</p>	Less than Significant	<b>4.7-4:</b> No mitigation is required.	Not Applicable



# CHAPTER 3.0

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## PROJECT DESCRIPTION

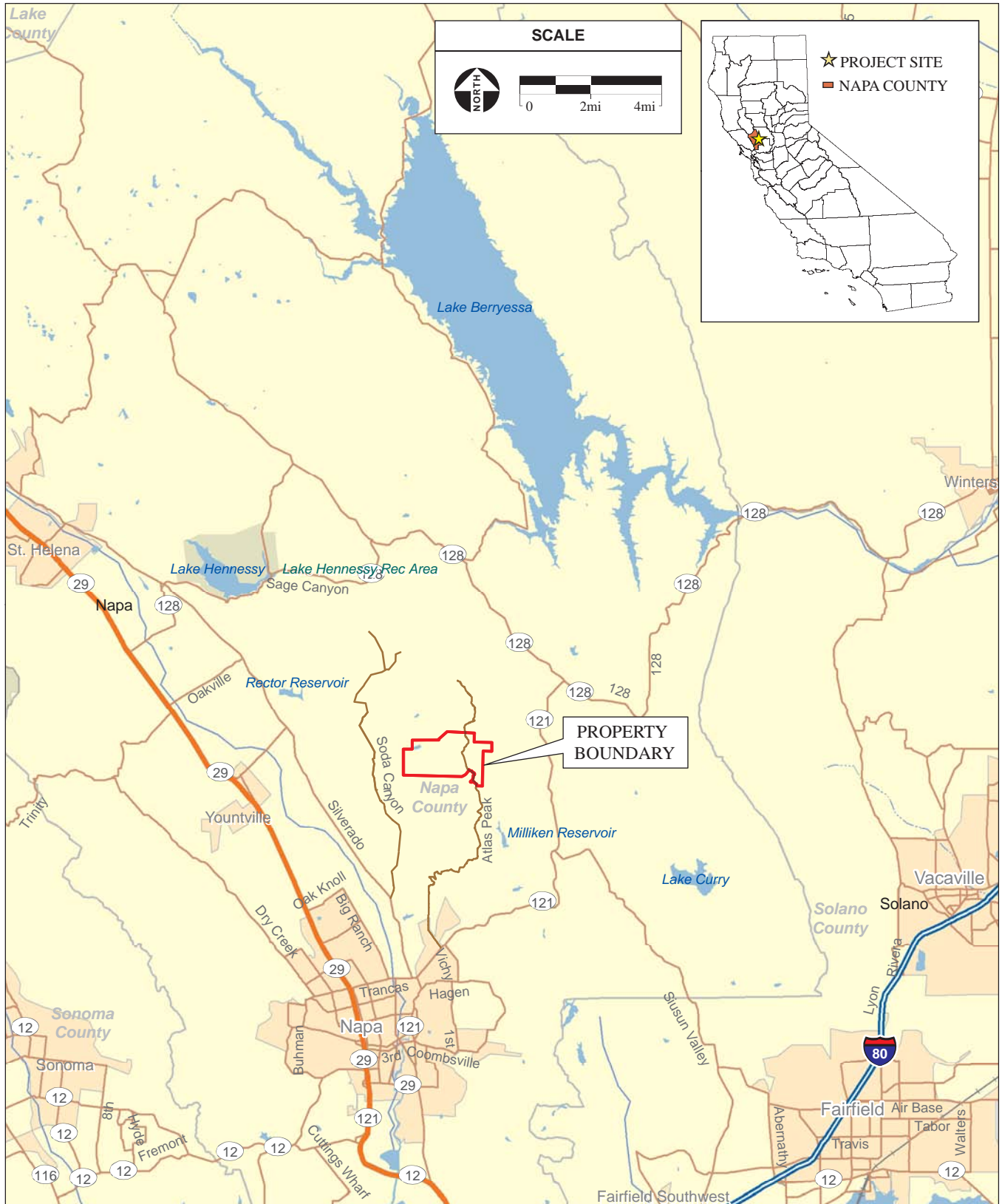
### 3.1 PROJECT LOCATION

The 1,593-acre Circle S Ranch property (project site) is located off Atlas Peak Road in the Milliken Reservoir, Capell Creek, and Soda Creek watersheds in south-central Napa County, California (**Figure 3-1**). The site is located at 3683 Atlas Peak Road, Napa, within Township 7 North, Range 4 West, Sections 25, 26, 30, 31, 35 and 36 on the U.S. Geological Survey (USGS) 7.5-minute “Yountville, California” and “Capell Valley, California” topographic quadrangles (**Figure 3-2**). An aerial photograph of the project site and surrounding Napa County parcels is shown in **Figure 3-3**.

### 3.2 PROJECT SITE AND VICINITY

A portion of the Circle S Ranch is located within the Foss Valley, which is part of the hilly to steep mountains located in the interior Northern California Coast Range. A number of northwesterly parallel mountain ridges and intervening valleys of varying widths characterize this area. Elevations at the project site range from 1,340 to 2,627 feet above mean sea level, with terrain that ranges from level to slopes over 30 percent. Characteristic vegetation communities occurring within this region include annual grassland, oak savannah, oak woodland, pine-oak woodland, chaparral, and riparian woodland. Aquatic habitats in this region include seasonal and perennial drainages, seasonal wetlands, wetland swales, groundwater seeps, vernal pools/swales, and reservoirs. The upland and valley floor portions of the project site, as well as the entire upper Milliken Reservoir watershed, were burned by the Atlas Peak Fire of June 1981.

The project site currently consists of a cattle ranch, and approximately 27 net acres of vineyard (existing Blocks 6B and 9) within approximately 31.3 gross acres. The existing vineyards were designed for a minimum 70 percent vegetative cover and most are currently managed such that cover is at or above the 70 percent cover. The property also contains grasslands, aquatic habitat, forested areas, as described above, in addition to residential and agricultural structures, rock walls, cattle and wildlife fencing, a paved access road and dirt roads. Access to the Circle S Ranch from State Route 121 is provided by Atlas Peak Road, which is a paved road oriented in a north to south direction spanning approximately 9,800 feet (1.8 miles) through the eastern portion of the project site. The primary structures on the project site are concentrated in a compound at the end of a paved driveway



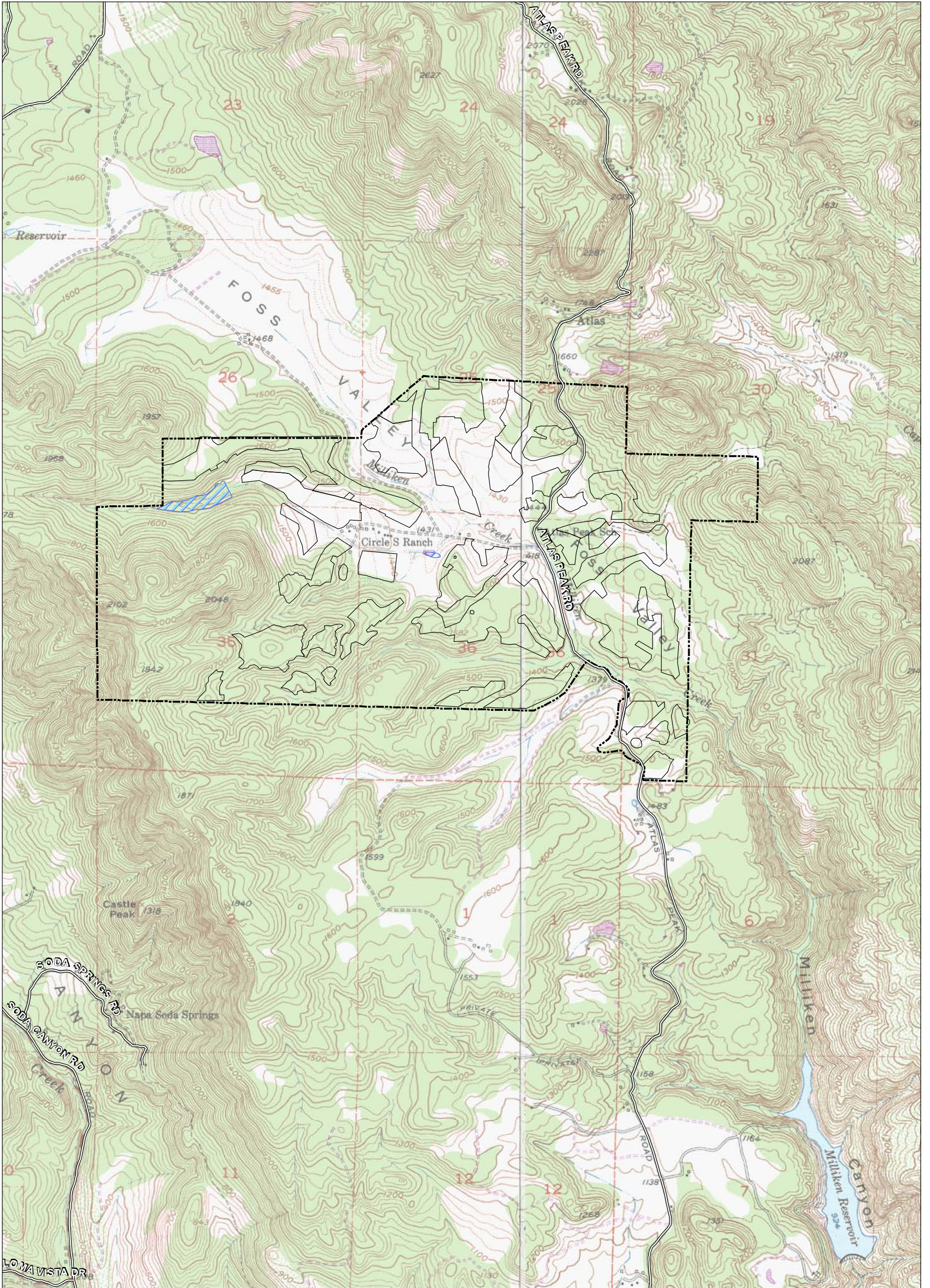
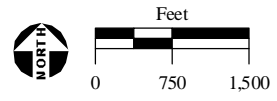
SOURCE: ESRI Data, 2005; AES 2007

Circle S Ranch P06-01508-ECPA Draft EIR / 207500 ■

**Figure 3-1**  
Regional Location Map

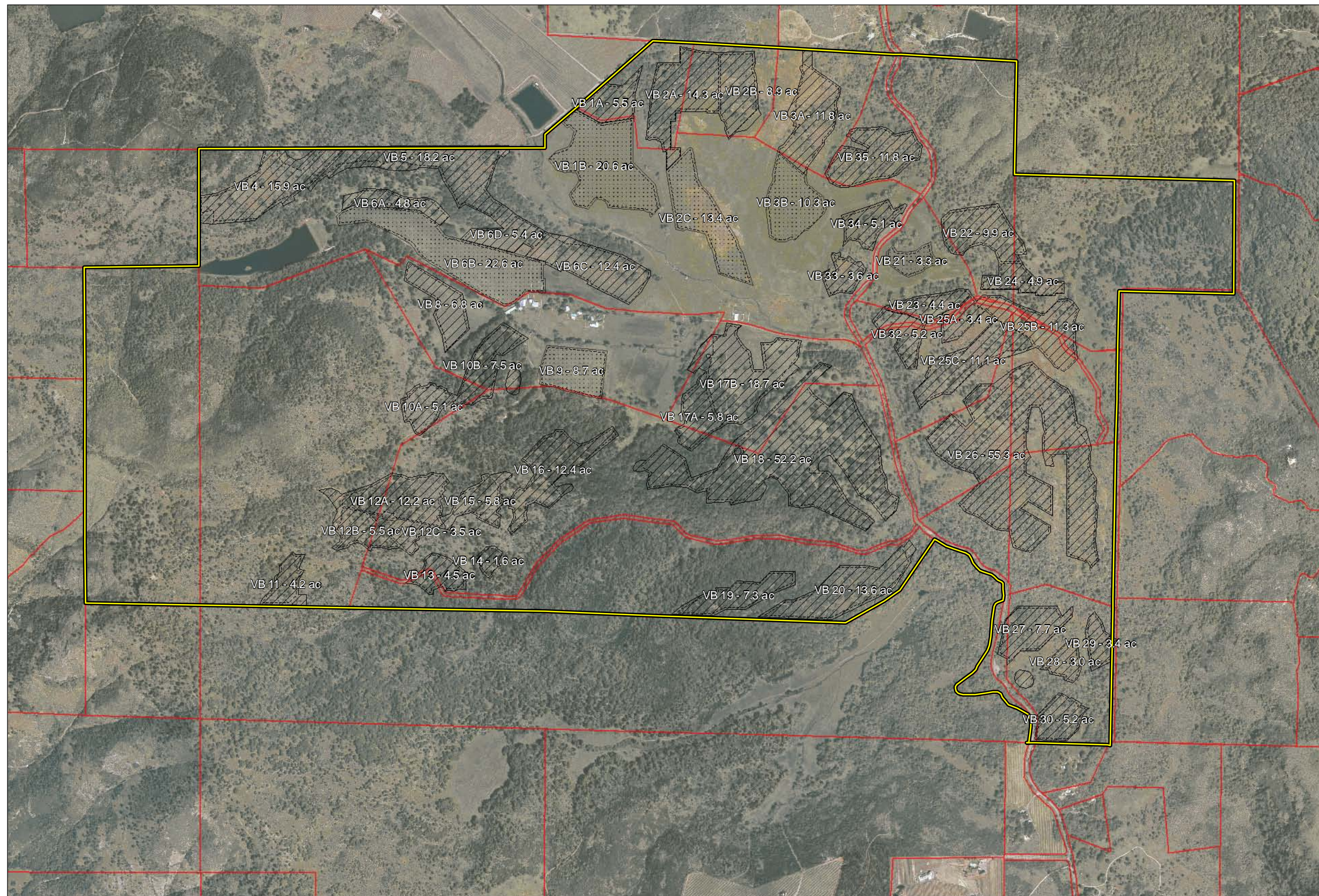
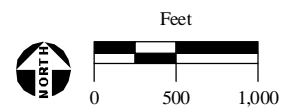
LEGEND

- Property Boundary
- Existing Reservoir
- Proposed Vineyard Blocks



**LEGEND**

- Napa County Parcels
- Property Boundary
- Proposed Vineyard Blocks
- Slopes Greater Than 5% and Included in ECPA
- Slopes Less Than 5% and Not Included in ECPA
- Vineyard Avenues



**Figure 3-3**  
Aerial Photograph

extending from Atlas Peak Road. The compound consists of numerous buildings, including a main ranch house, five guest houses/residences, shops/garages, barns, and equipment sheds. One staff currently lives onsite and up to six staff would live onsite with the proposed project. There are approximately 19 miles of existing roads on the project site that provide both seasonal and year-round access around the project site. Approximately 40,436 feet (7.7 miles) of cattle and wildlife fencing occurs on Circle S Ranch, located along portions of the northern property boundary and around several vineyard blocks on slopes less than five percent, as well as approximately 14,756 feet (2.8 miles) of rock walls (see **Figures 3-4 to 3-7**). The existing 27-acres of vineyard on the project site were installed between 2006 and 2007, and occur on slopes under 5 percent, therefore an erosion control plan is not required. Circle S Ranch has nearly a hundred-year history in agricultural and rangeland activities.

There are four existing wells on the project site (three of the wells do not have pumps installed), an existing 131 acre-foot (af) capacity reservoir, a two af capacity stockpond, seasonal wetlands, and several developed springs used for wildlife, domestic and irrigation use. The main drainage feature of the project site is Milliken Creek, which enters the project site on the northwest edge and exists on the southeast edge. Several unnamed tributaries drain the project site to Milliken Creek. Milliken Creek and its unnamed tributaries have experienced extensive erosion caused by unrestricted access of cattle to the watercourses and overgrazing of some areas of the Ranch for many years. Milliken Creek drains an area of 9.6 square miles to Milliken Reservoir. The Milliken Reservoir drainage has been designated by Napa County as a Sensitive Domestic Water Supply Drainage (SDWSD) since it supplies municipal water to the City of Napa. SDWSDs are managed with the goal of protecting the drinking water supply from sediment, turbidity, and pollution impacts. Below Milliken Reservoir, Milliken Creek is tributary to the Napa River.

The project site consists of 20 parcels that are zoned Agricultural Watershed (AW). A number of uses are allowed within this designation without the granting of a use permit, including various agricultural activities, one single-family dwelling unit per legal lot, a second residential unit either attached to or detached from an existing legal residential dwelling unit (provided that all conditions set forth in Section 18.104.180 are met), residential care facilities, family day care homes and one guest cottage. Additional uses are allowed upon the granting of a use permit, including kennels, wineries, and campgrounds.

Additional information about the project site and vicinity is provided in **Chapter 4.0** (Environmental Setting, Impacts and Mitigation Measures) of this EIR.

### 3.3 PROJECT OBJECTIVES

Specific project objectives associated with the installation and operation of the proposed vineyard are to:

- Develop additional vineyard acreage and produce premium quality grapes;
- Make efficient use of groundwater;
- Farm vineyards in a sustainable manner to the greatest extent possible;
- Provide opportunities for vineyard employment and economic development in Napa County;
- Take advantage of the site's unique topography, soils and microclimate for vineyard development; and
- Minimize earthmoving activities during development of the project and implement effective erosion control and runoff measures that can be cost effectively maintained in perpetuity.

Specific project objectives associated with the implementation of #P06-01508-Agricultural Erosion Control Plan Application (ECPA) are to:

- Avoid concentrations of storm water runoff;
- Control potential erosion and sedimentation that could result from project installation and subsequent vineyard operations;
- Restore existing streambank areas susceptible to erosion; and
- Repair, restore, and/or abandon existing creek crossings.

### 3.4 DESCRIPTION OF THE PROPOSED PROJECT

Initially, over 730 acres of potential vineyard were considered for the Circle S Ranch. However, modifications were made to the project before the ECPA was submitted to Napa County to minimize environmental disturbance and control erosion within the proposed vineyard areas based on findings from environmental studies that were conducted on the property.

For the purposes of the California Environmental Quality Act (CEQA), the project as proposed includes:

- Earthmoving and grading activities associated with soil cultivation; installation and maintenance of drainage, irrigation and erosion control features; ripping; tree and brush removal; and vineyard plantings and operation on approximately 378 net acres within 459 gross acres of disturbance. This includes:
  - 337 acres of new vineyard within 411 gross acres, divided into 40 vineyard blocks located on slopes greater than five percent;
  - 41 acres of vineyard within 48 gross acres, divided into four vineyard blocks on slopes less than five percent;
- Utilization of rock brought up through project development for road surfacing, construction of erosion control features, and decorative purposes, as well as placement of approximately 28.8 acres of rock in storage areas within the 459 gross acres of disturbance;
- Development and maintenance of approximately 4.4 miles of new roads for year-long use, improvement and maintenance of approximately 8.2 miles of existing roads for year-long use, the maintenance of approximately 5.5 miles of existing roads for seasonal use, and the abandonment of approximately 5.4 miles of existing roads;
- Construction of two bridges, one on Milliken Creek and one on a tributary to Milliken Creek;
- Installation of 12 culverts at five locations and two rocked water crossings, maintenance of 17 existing rocked water crossings and abandonment of eight crossings;
- Rolling dip installation and cutslope repair on roadways;
- Development of four proposed wells and the placement of three 10,000 gallon capacity water tanks;
- Spillway, diversion ditch, and gully repair;
- Filter strip installation;
- Construction of stone weirs along streams;
- Riparian restoration plan;
- Tree management plan;
- Removal of grazing from the property ;
- Installation of deer fencing and critter culverts; and
- Installation and maintenance of erosion control measures so they function as intended.

The proposed vineyard blocks are shown in **Figure 3-3** and described in **Table 3-1**. Blocks developed on slopes less than five percent would be concentrated in the southern reach of the Foss Valley located in the north-central portion of the project site. Blocks developed on slopes greater than five percent would be located in the upland areas surrounding Foss Valley throughout the project site.

**TABLE 3-1**  
PROPOSED VINEYARD BLOCKS

Block	Gross Acreage	Net Acreage	Block	Gross Acreage	Net Acreage
<b>Greater Than 5% Slope</b>			<b>Greater Than 5 % Slope</b>		
1A	5.5	4.8	23	4.4	3.7
2A	14.3	12.7	24	5.1	3.9
2B	8.9	7.3	25A	4.1	2.9
3A	11.8	9.6	25B	10.9	9.8
4	15.2	12.4	25C	10.8	9.6
5	16.2	13.4	26	55.3	48.4
6A	4.8	3.7	27	7.7	6.6
6C	13.4	10.6	28	3.0	2.4
6D	7.1	4.3	29	3.4	2.6
8	6.8	5.4	30	5.2	4.4
10A	5.4	4.1	32	5.2	4.3
10B	7.2	5.9	33	3.6	2.5
11	4.2	2.9	34	5.1	3.9
12A	11.4	9.9	35	11.8	9.9
12B	5.6	4.1	Other	1.9	0.0
12C	4.2	2.8	<i>Subtotal</i>	<i>411.1</i>	<i>336.9</i>
13	4.5	3.5	<b>Less Than 5% Slope<sup>1</sup></b>		
14	1.6	1.1	1B	20.6	18.1
15	5.8	3.8	2C	13.4	11.2
16	12.4	9.9	3B	10.3	9.0
17A	7.5	5.0	21	3.3	2.4
17B	17.0	14.4	<i>Subtotal</i>	<i>47.6</i>	<i>40.7</i>
18	52.2	45.0	<b>Total</b>	<b>458.7</b>	<b>377.6</b>
19	7.3	5.7			
20	13.6	11.3			
22	9.7	8.4			

1. Vineyard Blocks 6B and 9 exist on slopes less than 5 percent and are not included in Table 3-1; Block 6B is 19.4 net acres within 22.6 gross acres and Block 9 is 7.4 net acres within 8.7 gross acres. Source: PPI Engineering, 2007

Pursuant to Chapter 18.108 of the Napa County Code (Conservation Regulations), ECPAs are required for agricultural projects involving grading and earthmoving activities on slopes over five percent<sup>1</sup>. Napa County is responsible for approval of the ECPA pursuant to Chapter 18.108 of the Napa County Code. The ECPA (**Appendix B**) was prepared in accordance with Chapter 18.108 of the Napa County Code by PPI Engineering on behalf of Circle S Ranch.

<sup>1</sup> County Code 18.108.070 (B) states that no otherwise permitted earthmoving activity, grading, improvement, or construction of a structure shall commence within any erosion hazard area for an agricultural project on slopes over five percent. Erosion hazard area means those portions of parcels of land having slopes over five percent.



The project is designed to minimize impacts to water quality, biological resources, slope instability and other associated environmental effects in accordance with Chapter 18.108.070<sup>2</sup> and 18.108.027<sup>3</sup> of the County Code.

Subsequent agricultural activities such as vineyard maintenance and ongoing vineyard operations (including harvest) associated with the proposed project are considered indirect physical changes due to the proposed project, and are considered in this EIR. The development of proposed vineyard blocks on slopes less than five percent are not included in the ECPA, however; these areas were evaluated in the environmental studies conducted during development of the ECPA and are subject to the same avoidance measures and are evaluated in this EIR.

**Table 3-2** describes the clearing, earthmoving, and implementation goals proposed for the project; the proposed project would be consistent with County Code Section 18.108.027.

**TABLE 3-2**  
PROPOSED PROJECT GOALS

Schedule	Description
April 1	Commence clearing and tillage operations. Blocks requiring irrigation of cover crop will be prioritized. Begin crushing rock and graveling roads.
September 1	All earth-disturbing activities and erosion control measures complete consistent with Code Section 18.108.027. All clearing and tillage operations complete. Cover crop irrigation systems installed in proposed Blocks 11, 12 and 15. Filter strip irrigation system installed in Block 13. Crushing rock and graveling roads ceases.
September 15	Seeding, mulching, winterization complete.

Source: PPI Engineering, 2007

### 3.4.1 #P06-01508-ECPA FEATURES

**Figures 3-4** through **3-7** illustrate the site plans for the proposed project, including the locations of proposed erosion control measures, stream restoration measures, and deer fencing. **Figures 3-8** and **3-9** detail the construction elements of the measures. Note that the figures, text and details provided below were extracted from the ECPA that was prepared by PPI Engineering and do not necessarily represent the complete ECPA (**Appendix B**).

<sup>2</sup> County Code 18.108.070 specifically notes that ECPs shall create the least potential for erosion; avoid leaving any portion of a disturbed site unprotected from erosion between September 15 and April 1; vegetation removal shall be limited to the minimum amount necessary to accommodate the project and, the project shall not adversely affect sensitive, rare, threatened, or endangered plants or animals, or their habitats; temporary erosion control measures shall be sufficient to stabilize the soil; and all erosion control facilities shall be maintained in accordance with the approved ECP.

<sup>3</sup> County Code 18.108.027 applies to projects located within the County's Sensitive Domestic Water Supply Drainages (SDWSD). The proposed project is located in the Millikin Creek watershed, a SDWSD. According to this section, a minimum of 40 percent of the shrub/brush vegetation (understory) and 60 percent of the tree canopy shall be maintained on the project site. All earth disturbing activities shall be limited to April 1 to September 1 of each year and all winterization measures shall be in place by September 15 of any given year. Runoff shall be spread in small incremental doses into relatively flat buffer areas. Drainage facilities, including outfalls, shall be sized and designed to handle the runoff from a 100-year storm event. Outlets shall be protected against erosion for the 100-year storm event. The director of the Conservation, Development and Planning Department shall provide notice to the owner/operator of a public-serving water system. If the owner/operator submits credible evidence that the delivery of sediment or other pollutants into their reservoir from the drainage will increase by more than one percent on an individual project basis or by more than ten percent on a cumulative basis, the ECP shall not be approved until a public hearing has been held before the commission and a use permit has been issued. A geotechnical report is required specifying the depth and nature of the soils and bedrock present and the stability, both current and projected, shall be submitted by the property owner at the time of the application.

**LEGEND**

Proposed Vineyard Erosion Control

- Waterbar or Wattlebar
- Rock
- Other

Proposed Road Erosion Control

- Bridge
- Culvert
- Existing Rocked Water Crossing
- Proposed Rocked Water Crossing
- Rolling Dip
- Road Cut Slope Repair
- Road Drainage

Proposed Stream Restoration

- Stone Weir
- Stream Bank Repair
- Abandoned Rock Water Crossing

Proposed Deer Fencing

- Fence Gate/Access
- Wildlife Fencing

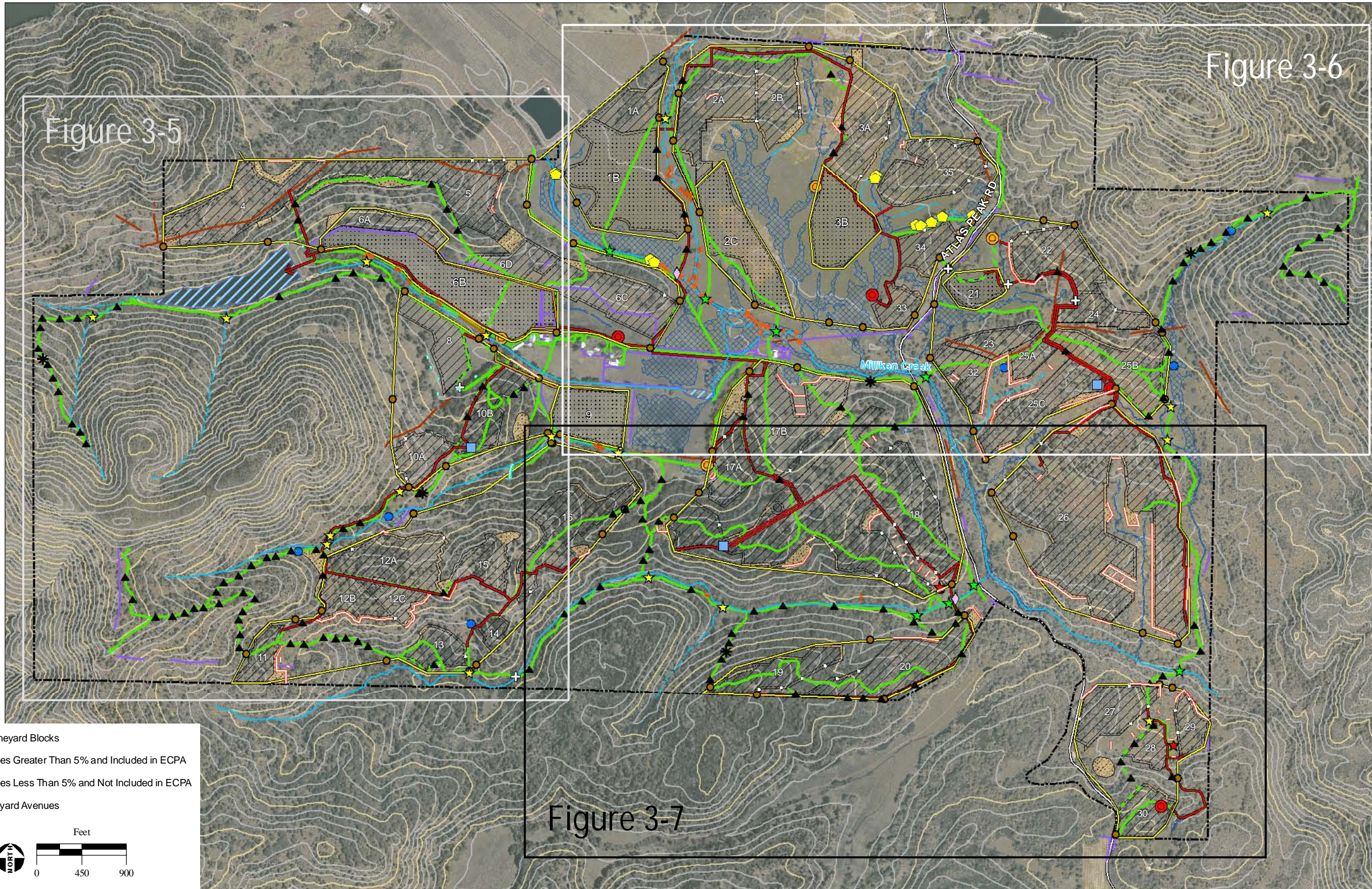
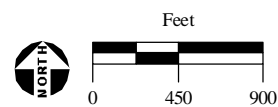
Proposed Water Supply

- Proposed Water Storage Tank
- Existing Irrigation Pipeline
- Proposed Irrigation Pipeline
- Existing Groundwater Well
- Proposed Groundwater Well

Other

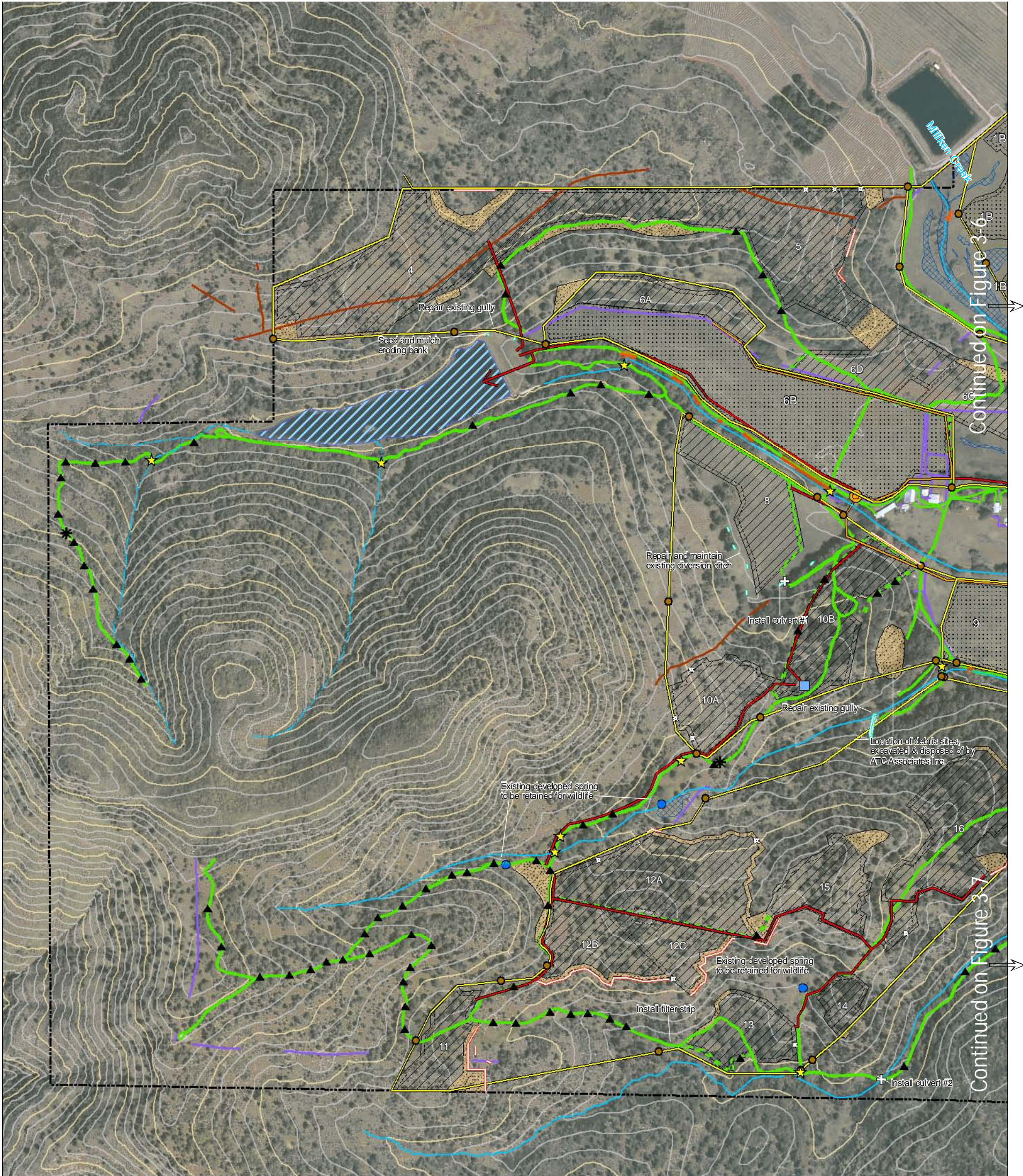
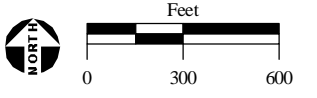
- Rock Disposal Area
- Wildlife Watering Location
- Existing Road
- New Road
- Existing Rockwalls
- Existing Fence
- USGS Streams
- Other Drainage
- 50-foot Setback
- 20-foot Setback
- Wetlands
- Existing Reservoir
- Property Boundary

- Proposed Vineyard Blocks
- Slopes Greater Than 5% and Included in ECPA
  - Slopes Less Than 5% and Not Included in ECPA
  - Vineyard Avenues



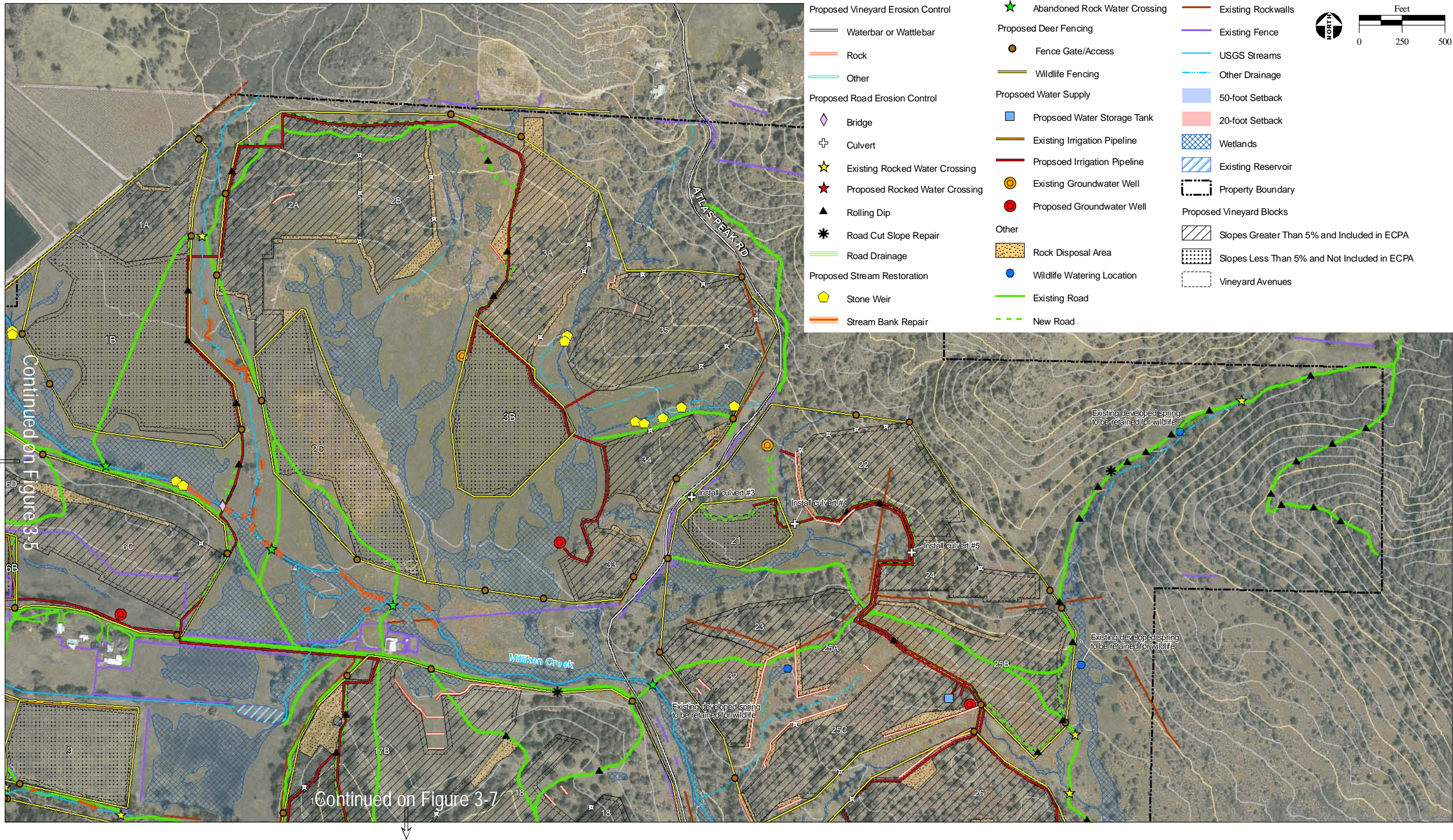
**LEGEND**

Proposed Vineyard Erosion Control	Proposed Stream Restoration	Proposed Irrigation Pipeline	Other Drainage
Waterbar or Wattlebar	Stone Weir	Existing Groundwater Well	50-foot Setback
Rock	Stream Bank Repair	Proposed Groundwater Well	20-foot Setback
Other	Abandoned Rock Water Crossing	Other	Wetlands
Proposed Road Erosion Control	Proposed Deer Fencing	Rock Disposal Area	Existing Reservoir
Bridge	Fence Gate/Access	Wildlife Watering Location	Property Boundary
Culvert	Wildlife Fencing	Existing Road	Proposed Vineyard Blocks
Existing Rocked Water Crossing	Proposed Water Supply	New Road	Slopes Greater Than 5% and Included in ECPA
Proposed Rocked Water Crossing	Proposed Water Storage Tank	Existing Rockwalls	Slopes Less Than 5% and Not Included in ECPA
Rolling Dip	Existing Irrigation Pipeline	Existing Fence	Vineyard Avenues
Road Cut Slope Repair		USGS Streams	

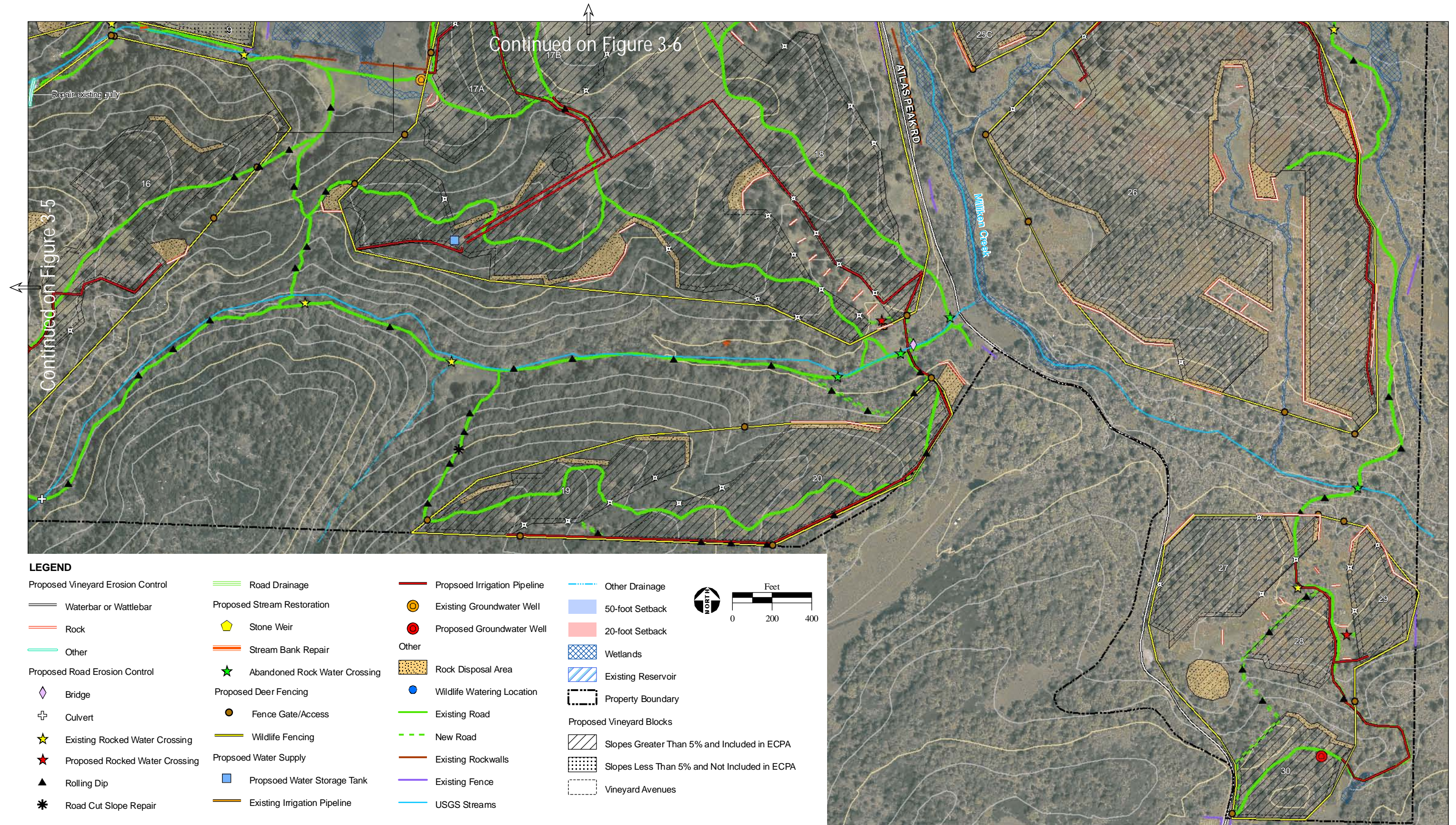


Continued on Figure 3-6

Continued on Figure 3-7

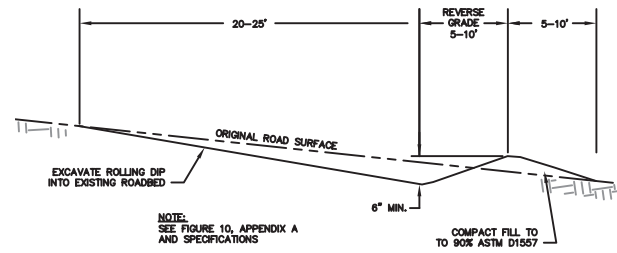


**Figure 3-6**  
ECPA Site Plan

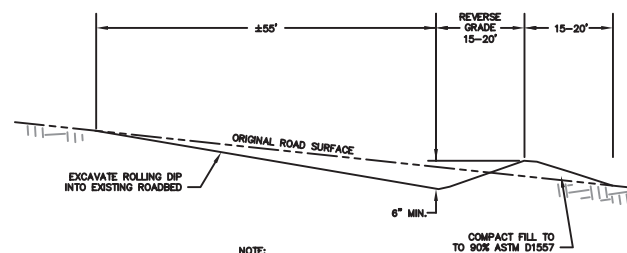


**LEGEND**

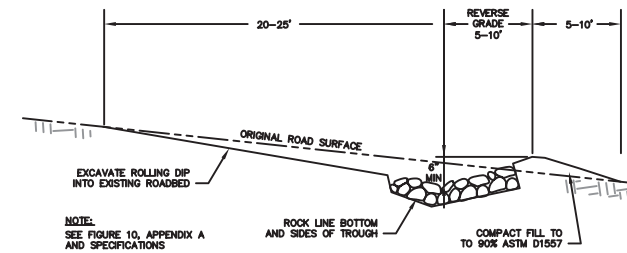
- |                                   |                               |                              |  |
|-----------------------------------|-------------------------------|------------------------------|--|
| Proposed Vineyard Erosion Control | Proposed Stream Restoration   | Proposed Irrigation Pipeline | Other Drainage                               |
| Waterbar or Wattlebar             | Stone Weir                    | Existing Groundwater Well    | 50-foot Setback                              |
| Rock                              | Stream Bank Repair            | Proposed Groundwater Well    | 20-foot Setback                              |
| Other                             | Abandoned Rock Water Crossing | Other                        | Wetlands                                     |
| Proposed Road Erosion Control     | Proposed Deer Fencing         | Rock Disposal Area           | Existing Reservoir                           |
| Bridge                            | Fence Gate/Access             | Wildlife Watering Location   | Property Boundary                            |
| Culvert                           | Wildlife Fencing              | Existing Road                | Proposed Vineyard Blocks                     |
| Existing Rocked Water Crossing    | Proposed Water Supply         | New Road                     | Slopes Greater Than 5% and Included in ECPA  |
| Proposed Rocked Water Crossing    | Proposed Water Storage Tank   | Existing Rockwalls           | Slopes Less Than 5% and Not Included in ECPA |
| Rolling Dip                       | Existing Irrigation Pipeline  | Existing Fence               | Vineyard Avenues                             |
| Road Cut Slope Repair             |                               | USGS Streams                 |  |



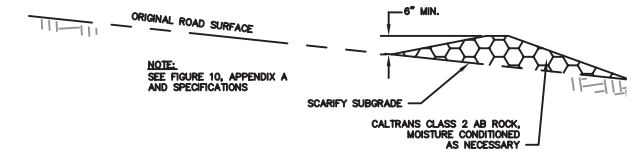
① TYPICAL ROLLING DIP TYPE A  
N.T.S.



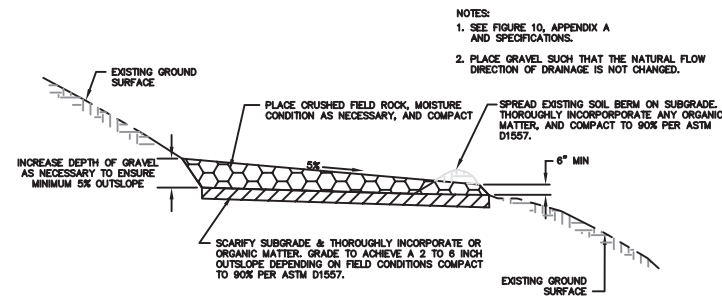
② TYPICAL ROLLING DIP TYPE B  
N.T.S.



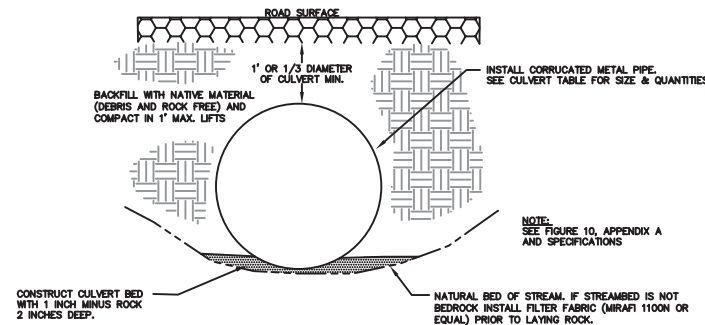
③ TYPICAL ROLLING DIP 'C'  
N.T.S.



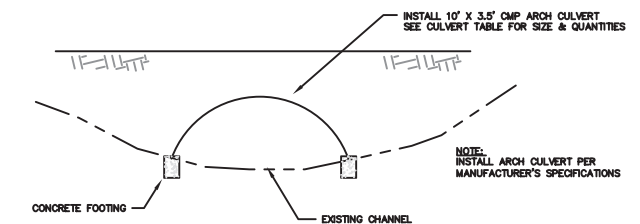
④ TYPICAL ROLLING DIP - ALTERNATIVE  
N.T.S.



⑤ TYPICAL OUTSLOPED ROAD  
N.T.S.

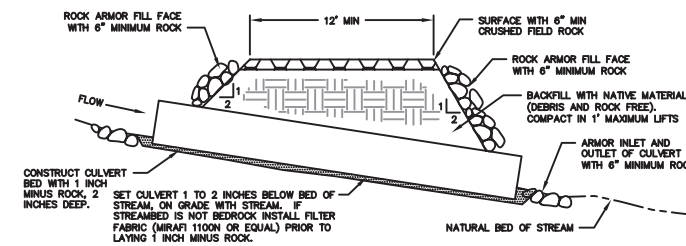


CULVERT #1, 3, 4 & 5 INSTALLATION  
N.T.S.

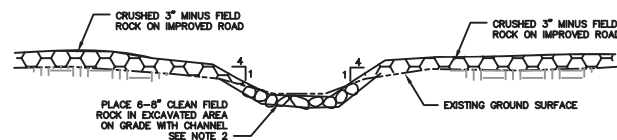


CULVERT #2 INSTALLATION  
N.T.S.

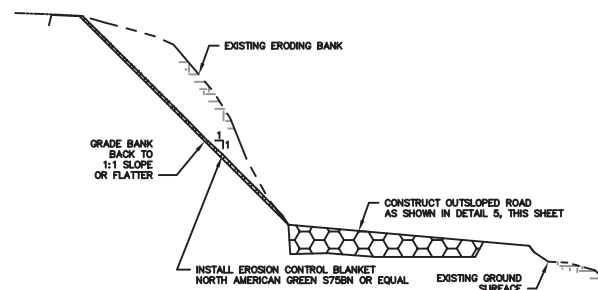
CULVERT TABLE		
CULVERT #	SIZE	QUANTITY
1	36"	1
2	10' X 3.5'	1
3	24"	8
4	24"	3
5	36"	1



⑥ TYPICAL CULVERT INSTALLATION  
N.T.S.

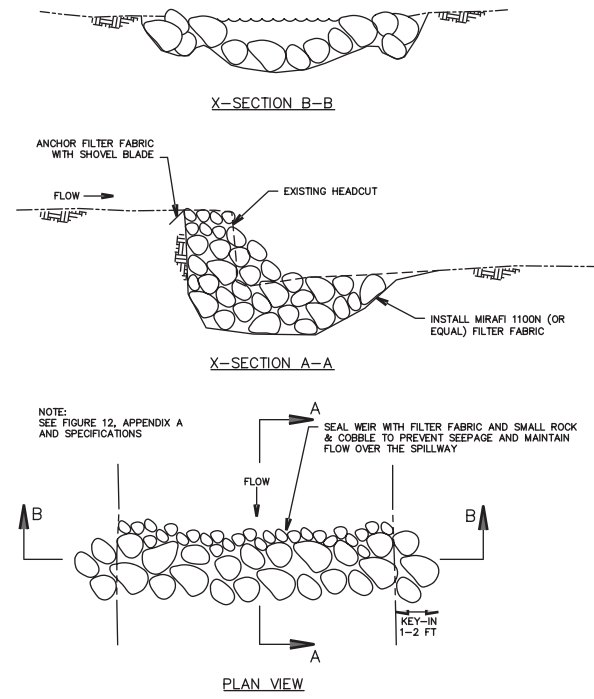


⑦ TYPICAL ROCKED WATER CROSSING  
N.T.S.

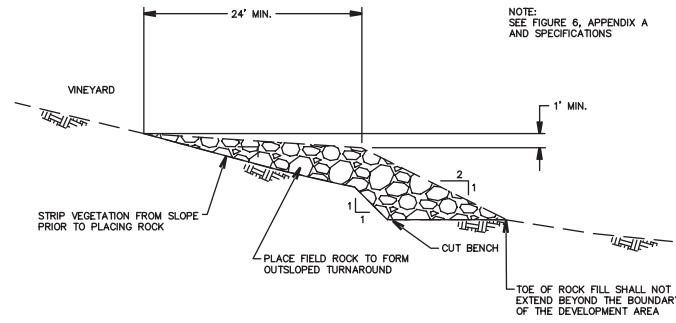


⑧ TYPICAL CUT SLOPE REPAIR  
N.T.S.

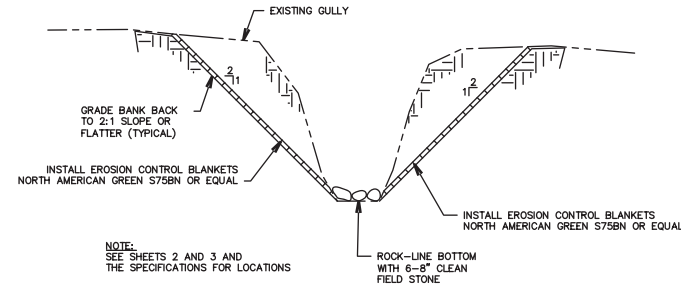
DETAILS ON THIS SHEET:  
 TYPICAL ROLLING DIP TYPE A  
 TYPICAL ROLLING DIP TYPE B  
 TYPICAL ROLLING DIP TYPE C  
 TYPICAL ROLLING DIP - ALTERNATIVE  
 TYPICAL OUTSLOPED ROAD  
 TYPICAL CULVERT INSTALLATION  
 TYPICAL ROCKED WATER CROSSING  
 TYPICAL CUT SLOPE REPAIR



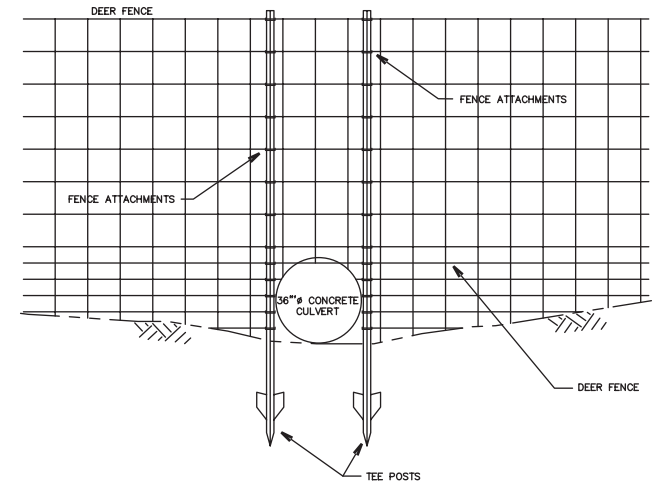
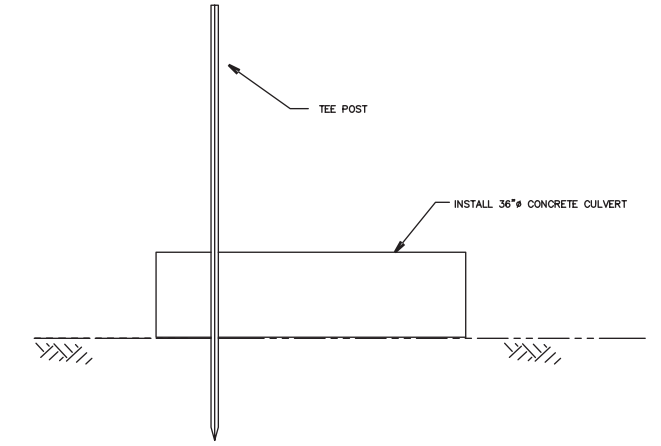
1  
8  
STONE WEIR  
N.T.S.



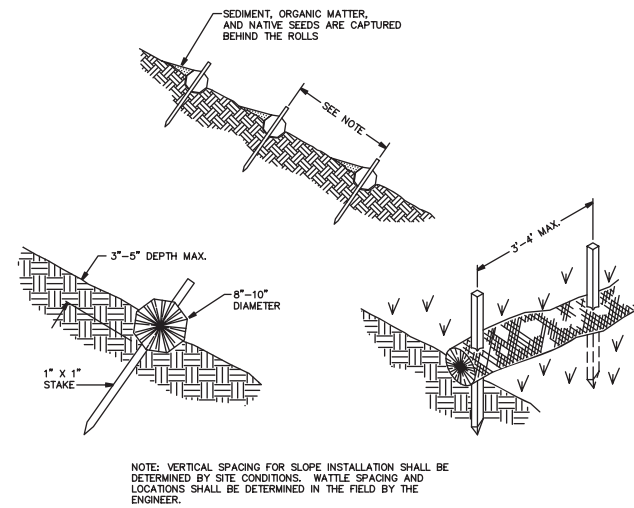
2  
8  
ROCK REPOSITORY/OUTSLOPED TURNAROUND  
N.T.S.



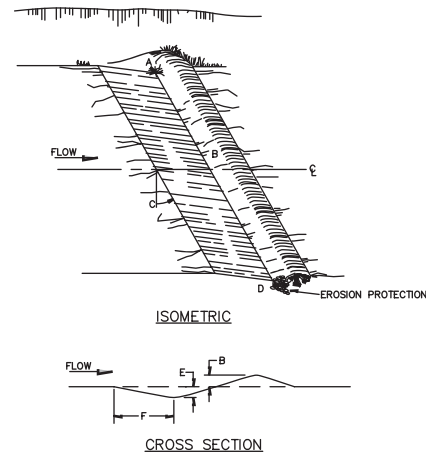
3  
8  
TYPICAL GULLY REPAIR  
N.T.S.



4  
8  
CRITTER CULVERT  
N.T.S.

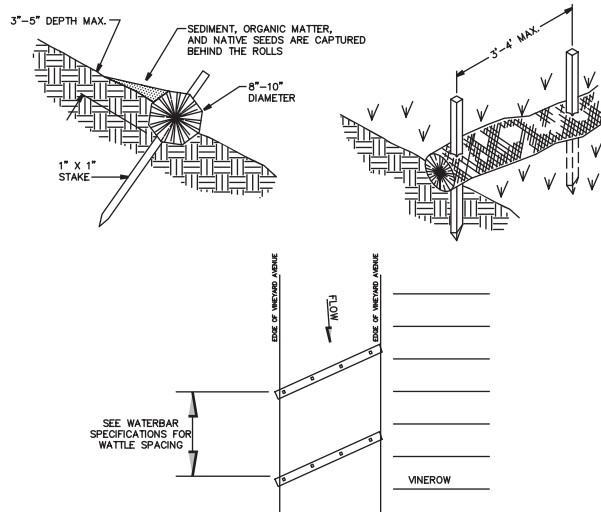


5  
8  
STRAW WATTLE INSTALLATION  
N.T.S.



- NOTES:
1. WATERBAR CONSTRUCTION FOR LITTLE OR NO TRAFFIC. SPECIFICATIONS ARE AVERAGE AND MAY BE ADJUSTED TO CONDITIONS.
  2. A, TIE-IN TO BANK.
  3. B, CROSS DRAIN BERM HEIGHT 4 TO 6 INCHES ABOVE THE ROAD.
  4. C, ANGLE DRAIN 30 TO 45 DEGREES DOWNGRADE WITH ROAD CENTERLINE.
  5. D, DRAIN OUTLET CUT 8 TO 16 INCHES INTO ROADBED.
  6. E, DEPTH 4 TO 6 INCHES.
  7. F, 3 TO 4 FEET.

6  
8  
WATERBAR INSTALLATION  
N.T.S.



7  
8  
WATTLEBAR INSTALLATION  
N.T.S.

- DETAILS ON THIS SHEET:
- STONE WEIR
  - ROCK REPOSITORY/OUTSLOPED TURNAROUND
  - TYPICAL GULLY REPAIR
  - CRITTER CULVERT
  - STRAW WATTLE INSTALLATION
  - WATERBAR INSTALLATION
  - WATTLEBAR INSTALLATION

3.4.1-1 EROSION CONTROL MEASURES

Erosion control measures associated with #P06-01508-ECPA, including the vineyard block areas that they would serve and the technique used to control/reduce erosion, are briefly discussed below and summarized in **Table 3-3**.

Vineyard erosion control involves both vegetative measures and physical measures that are designed to reduce overland flows and erosive power of runoff, in addition to, trapping eroded soil on-site. The primary vegetative measure involves establishing a permanent no-till 75 to 80 percent cover crop throughout the proposed vineyard areas. Other measures include straw mulch applied to all disturbed areas, construction of a filter strip at the south edge of proposed Block 13 (**Figures 3-5** and **3-9**) and stone weirs at locations shown on **Figures 3-4** through **3-7** and detailed in **Figure 3-9**, gully repair at locations shown on **Figure 3-5** and detailed in **Figure 3-9**, cut slope repairs at locations shown on **Figure 3-10** and detailed in **Figure 3-8**, repair of an existing diversion ditch on the southwestern and southeastern sides of proposed Block 8 (**Figure 3-5**), and the installation of straw wattles, waterbars, and other temporary erosion control measures as needed (**Table 3-3**).

**TABLE 3-3**  
#P06-01508-ECPA EROSION CONTROL MEASURES

Erosion Control Measure	Land Use Area	Technique
<b>Vineyard Erosion Control Measures</b>		
Cover crop	All proposed vineyard blocks	A permanent cover crop would be established by seeding disturbed areas with the following mix: Cucamonga Brome at eight to 25 pounds per acre (lbs/acre), Zorro Fescue at eight to 20 lbs/acre, Hykon Rose Clover at 10 lbs/acre, Sub-clover at eight lbs/acre, and Yarrow at five lbs/acre prior to September 15. Vineyard management personnel would apply fertilizer as necessary.  The permanent cover crop would be managed each year such that any areas that have less than 75 percent vegetative cover would be re-seeded and mulched until adequate coverage is achieved. Cover crop for proposed Blocks 11, 12A, 12B, 12C and 15 would be managed each year to 80 percent vegetative cover to control erosion.
Straw wattles ( <b>Figure 3-9</b> )	Proposed Blocks 2A, 2B, 3A, 4, 5, 6C, 6D, 10A, 10B, 11, 12A, 12B, 12C, 15, 16N, 16S, 17A, 17B, 18, 20, 22, 23, 24, 35, 25A, 25B, 25C, 26, 27, 28, 29, 30, 32.	Installed by September 15 of the year of construction to help prevent sediment from leaving developed areas. In subsequent years, wattles shall only be required if upslope areas have been disturbed to re-establish cover crop.
Filter strip	Proposed Block 13	Increased vegetation cover by seeding the area with a mixture of native perennial grasses. To preserve the native grasses already present, the area would not be disked but rather mowed without ground disturbance. Seed shall be broadcast at 40 to 50 pounds per acre. The filter strip shall be irrigated prior to September 15 the year of establishment.



Erosion Control Measure	Land Use Area	Technique																		
Diversion ditch / gully repair (Figure 3-9)	Proposed Block 8 (diversion ditch), several locations (gullying)	Banks shall be graded back to a 2:1 or gentler slope. Erosion blankets shall be installed per manufacturer's specifications. The bottom of the diversion ditch shall be rock-lined with clean fieldstone to prevent further erosion. Where the diversion ditch banks transition to the flat field, banks do not require grading and shall be seeded and mulched instead of installing erosion control blankets.																		
<b>Road Development and Erosion Control Measures</b>																				
Cut slope repair (Figure 3-8)	Along existing roadways as needed	Eroding cut slopes shall be graded back to a 1:1 or flatter slope. Erosion control blankets shall be installed per manufacturer's specifications.																		
Culvert installation (Figure 3-8)	Southern boundaries of proposed Blocks 8, 14, and 34, and west of Vineyard Blocks 22 and 24	<table border="1"> <thead> <tr> <th>Culvert</th> <th>Size</th> <th>Quantity</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>36"</td> <td>1</td> </tr> <tr> <td>2</td> <td>10'x3.5'</td> <td>1</td> </tr> <tr> <td>3</td> <td>24"</td> <td>6</td> </tr> <tr> <td>4</td> <td>24"</td> <td>3</td> </tr> <tr> <td>5</td> <td>36"</td> <td>1</td> </tr> </tbody> </table> <p>Culverts shall be aligned with the natural stream channel and set 1- to 2-inches below original stream grade. Care shall be taken to not disturb the stream channel, bank and surrounding area any more than is necessary from culvert installation and road construction. All disturbed areas shall be seeded and mulched. Permits from appropriate regulatory agencies shall be obtained before construction.</p>	Culvert	Size	Quantity	1	36"	1	2	10'x3.5'	1	3	24"	6	4	24"	3	5	36"	1
Culvert	Size	Quantity																		
1	36"	1																		
2	10'x3.5'	1																		
3	24"	6																		
4	24"	3																		
5	36"	1																		
Bridge construction (Figure 3-10)	Across Milliken Creek north of the eastern edge of Block 2C and across a tributary to Milliken Creek near the southeastern corner of proposed Block 18.	The two proposed bridges shall span over all jurisdictional areas.																		
Outsloped road (Figure 3-8)	All existing and proposed year-round roads, except for the existing paved driveway	Existing berm(s) shall be spread onto existing subgrade. Scarify subgrade and thoroughly incorporate organic matter. Crushed rock shall be placed such that the natural flow direction of drainage is not changed. Special care shall be made to ensure crushed rock is flush with the vertical cut slope to prevent washouts from surface runoff traveling down the cut slope.																		
Rolling Dip Type A (Figure 3-8)	Several locations along existing roads on moderate to steep slopes	Excavation into the existing road bed shall begin approximately 20 to 25 feet uphill from the rolling dip location, progressively steepening the grade until the axis is reached. The axis of the rolling dip shall be angled approximately 30 degrees to the road alignment. Any vegetation that occurs within the road in the graded area will be graded along with the road fill when the dip is constructed. Vegetation outside of the road will not be disturbed.																		

Erosion Control Measure	Land Use Area	Technique
Rolling Dip Type B (Figure 3-8)	Several locations along existing roads that are relatively flat	Used in areas that require a long, gentle approach to the rolling dip. Excavation into the existing road bed shall begin approximately 55 feet uphill from the rolling dip location, progressively steepening the grade until the axis is reached. The axis of the rolling dip shall be angled approximately 30 degrees to the road alignment. The reverse grade portion of the dip shall be 15 to 20 feet, with another 15 to 20 feet of slope to reach the existing road surface. Any vegetation that occurs within the road in the graded area will be graded along with the road fill when the dip is constructed. Vegetation outside of the road will not be disturbed.
Rolling Dip Type C (Figure 3-8)	Several locations along existing roads on gradual slopes	Used in areas where rolling dips are expected to convey slightly more surface runoff than the average rolling dip location at the project site due to the surrounding topography. Excavation into the existing road bed shall begin approximately 20 to 25 feet uphill from the rolling dip location, progressively steepening the grade until the axis is reached. The axis of the rolling dip shall be angled approximately 30 degrees to the road alignment. The reverse grade portion of the dip shall be 15 to 20 feet, with another 15 to 20 feet of slope to reach the existing road surface. Any vegetation that occurs within the road in the graded area will be graded along with the road fill when the dip is constructed. Vegetation outside of the road will not be disturbed.
Construction of new rocked water crossing (Figure 3-8)	Several locations	If bed of channel is not bedrock, place filter fabric under rock. Care shall be taken not to disturb channel, bank and surrounding area any more than is necessary for rocked water crossing and road construction. All disturbed areas shall be seeded and mulched. Permits from appropriate regulatory agencies shall be obtained before construction.
<b>Stream Restoration Measures</b>		
Stone weirs (Figure 3-9)	Along streams as needed	Excavate existing headcut and install filter fabric. Smaller rock shall be placed at the upstream edge of the weir. All disturbed areas shall be seeded and mulched. Permits from appropriate regulatory agencies shall be obtained before construction.
Existing spillway repair (Figure in ECP; Appendix B)	Existing reservoir	The banks shall be supported with mortared rock walls on the upstream section of the spillway where the banks are actively eroding. The downstream section of the spillway will be reconfigured to prevent further erosion of the spillway banks as well as the bank of the stream into which it flows. The 90 degree turn in the spillway shall be protected from further erosion by grading the banks to 2:1 slope where necessary. Three leaning trees will be removed as a result of the construction. A portion of the bank shall be removed to create a larger area for flows, which will slow the velocity before the flow reaches the stream into which it empties. The bottom of channel shall be rock-lined with clean field stone to aid in slowing the flow. Permits from appropriate regulatory agencies shall be obtained before construction.

Erosion Control Measure	Land Use Area	Technique
<b>Measures Incorporated Throughout the Project Site</b>		
Straw mulching	All disturbed areas	Straw mulch would be applied to all disturbed areas at a rate of 3,000 pounds per acre prior to September 15.
Temporary measures	As needed	Temporary erosion control measures shall include straw wattles, waterbars, rolling dips, straw mulch and other practices as needed. The measures shall be maintained in a functional condition throughout the rainy season. Waterbars shall not be constructed such that they direct water onto adjacent properties. Wattlebars would be installed.
Maintenance	All erosion control features	Maintenance of the erosion control measures so they function as intended, and maintenance of the measures throughout the rainy season from September 15 through April 1.

Source: PPI Engineering, 2007























#### 3.4.1-2 ROAD DEVELOPMENT, BRIDGE CONSTRUCTION AND ROCK UTILIZATION

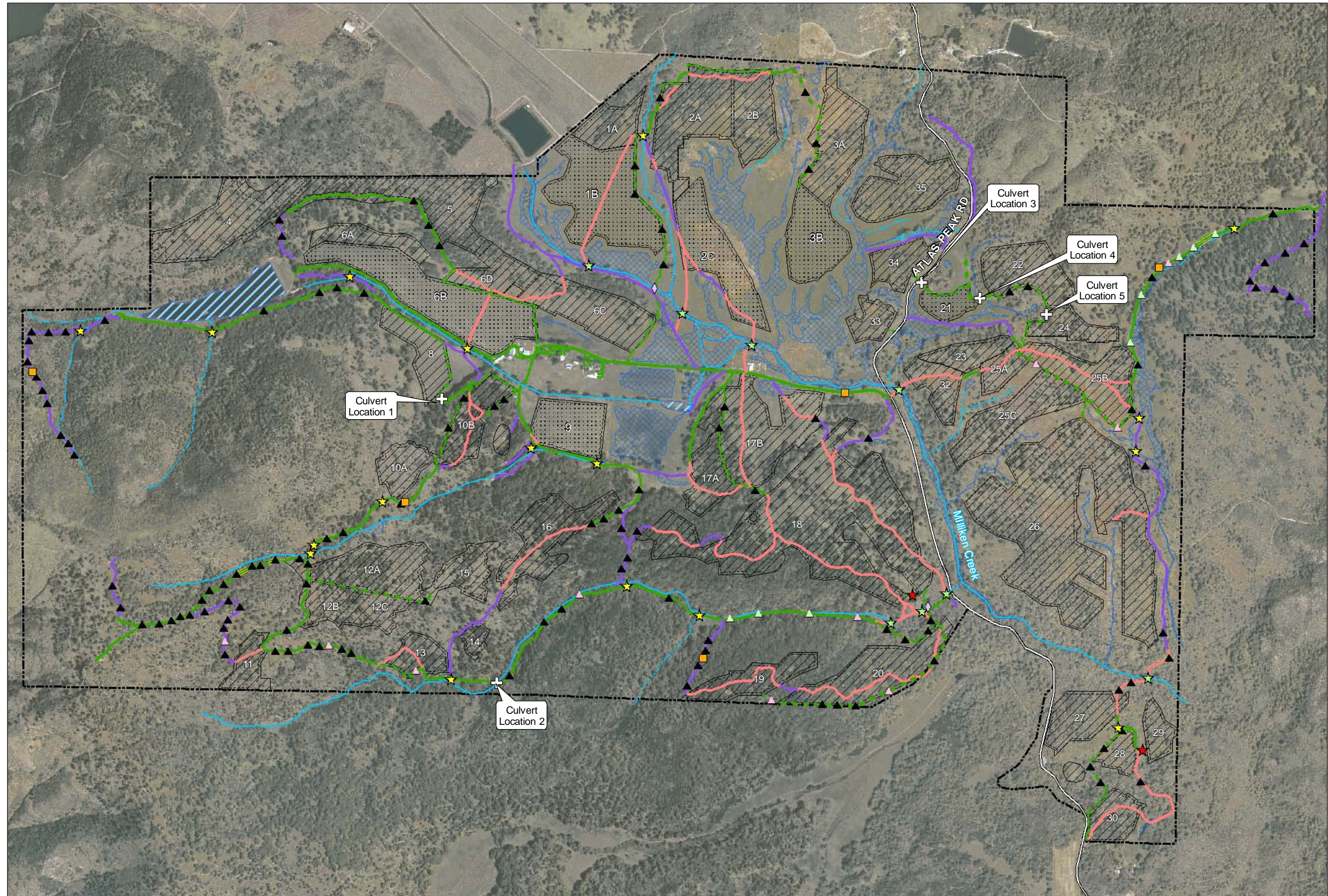
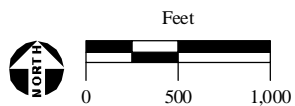
Road development and erosion control measures are detailed in **Figure 3-10**. #P06-01508-ECPA includes the construction and maintenance of approximately 4.4 miles of new roads for year-round access to proposed vineyard blocks and the improvement and maintenance of approximately 8.2 miles of existing roads for year-round access to the project site. Approximately 5.4 miles of existing roads would be abandoned with the project, resulting in the abandonment of five locations where roads cross Milliken Creek. About 5.5 miles of existing roads would be used seasonally; these roads would be winterized but would not be used during the rainy season. All existing and proposed year-round roads (12.6 miles) would be outslopped.

One bridge would be constructed over Milliken Creek near proposed Block 6C and one bridge would be constructed across a tributary to Milliken Creek near the southeastern corner of proposed Block 18 (**Figure 3-10**). The construction of the bridge across the tributary would allow for an existing ranch road to be relocated away from the stream and would allow for the abandonment of three existing crossings. The two proposed bridges would span over all jurisdictional areas.

A significant amount of rock would be generated from the proposed project. A rock crusher would be set up onsite within one or more of the proposed vineyard blocks to produce rock suitable for surfacing the proposed all-weather roads. Some of the rock generated would be used to construct erosion control features. Rock would also be used for decorative purposes, such as rock walls in and around the residential and shop compound. In certain locations the rock would be used to surface vineyard avenues, which would help retain

**LEGEND**

-  Property Boundary
  -  USGS Streams
  -  Other Drainages
  -  Wetlands
  -  Existing Reservoir
  -  Existing Road - Proposed Year-Round
  -  Proposed Year-Round Road
  -  Existing Road - Proposed Seasonal
  -  Existing Road - Proposed Abandoned
- Road Erosion Control**
-  Proposed Rolling Dip Type A
  -  Proposed Rolling Dip Type B
  -  Proposed Rolling Dip Type C
  -  Proposed Bridge
  -  Proposed Culvert
  -  Existing Rocked Water Crossing
  -  Proposed Rocked Water Crossing
  -  Proposed Abandoned Rocked Water Crossing
  -  Proposed Road Cut Slope Repair
  -  Proposed Road Drainage
- Proposed Vineyard Blocks**
-  Slopes Greater Than 5% and Included in ECPA
  -  Slopes Less Than 5% and not Included in ECPA
  -  Vineyard Avenues



**Figure 3-10**  
Proposed Road Erosion Control

sediment as well as disperse runoff from vineyard blocks. Rock not used immediately would be stockpiled for future use in areas indicated on the site plan figures (**Figures 3-4 through 3-7**); these areas total approximately 28.8 acres and are located within the approximately 459 gross acres of disturbance. These locations were selected for their proximity to vineyard areas and because they would minimize visual impacts. All stockpiles are expected to be less than 20 feet in height and would not be located in a viewshed.

#### **3.4.1-3 CULVERTS, CROSSINGS AND ROLLING DIPS**

A total of 12 culverts would be installed at five locations as follows: immediately south of the boundary of proposed Block 8, approximately 300 feet south of proposed Block 14, adjacent to Atlas Peak Road between proposed Blocks 21 and 34, immediately to the east of proposed Block 21, and immediately to the west of proposed Block 24 (**Figure 3-10**). Two rocked water crossings would be constructed in association with proposed roads to access the vineyard blocks, which would be located near the southeastern boundary of proposed Block 18 and the eastern boundary of proposed Block 28 (**Figure 3-10**). Seventeen existing rocked water crossings would be maintained (**Figure 3-10**). One of three types of rolling dips (Type A, B or C) would be installed on roadways to control erosion and runoff; see **Figures 3-4 through 3-7** for anticipated locations and **Figure 3-8** and **Table 3-3** for details and descriptions. Eroding road cut slopes would be repaired as shown in **Figures 3-8 and 3-10**.

#### **3.4.1-4 PROPOSED WATER TANKS AND WELLS**

Four existing wells (three of which would need pumps installed), four proposed wells and the existing reservoir would be used as sources of water for irrigating vines and the cover crop. The existing well that has a pump is currently being powered by a diesel generator. Once pumps are installed in the three remaining existing wells, they would be powered by diesel generators until PG&E power is available, at which time the wells would be switched over to the use of PG&E power. Four proposed wells would be developed within proposed Blocks 25 and 30 and near Blocks 6C and 33 (**Figure 4.6-2**)

A total of three proposed 10,000 gallon capacity water storage tanks would be located within proposed Blocks 10B, 18, and 25C to store groundwater and provide needed operational capacity for the project. Water usage for the proposed vineyard is estimated at approximately 0.5 acre-feet per acre per year for the first three years, and 0.35 acre-feet per acre per year thereafter (RCS, 2007).

#### 3.4.1-5 SPILLWAY REPAIR

The existing spillway would be repaired (**Figure 3-5**). The details of the repair are described in **Appendix B**. The banks on the upstream section of the spillway would be supported with mortared rock walls. The downstream section of the spillway would be reconfigured to prevent further erosion. The banks at the 90 degree turn in the spillway would be graded to 2:1 slope where necessary to prevent further erosion. Banks would be protected using filter fabric and ten inch minus clean field stone. A bank would be removed to create a larger area for flows, thereby slowing the velocity before the flow reaches the stream into which it empties. The banks would also be graded to 2:1 slope and protected using filter fabric and rock-lining, and the bottom of the channel would be rock-lined. The opposite bank of the stream where the spillway enters would be protected.

#### 3.4.1-6 RIPARIAN RESTORATION

Tentative stream restoration locations and measures are detailed in **Figure 3-11**. To create the restoration plan, 19 streams on the property, including Milliken Creek, were evaluated prior to submittal of the ECPA. Ten of these streams were determined to require some form of restoration work. Stream restoration measures should be considered with some flexibility because streams are constantly in flux. Areas identified in the spring of 2006 (during the creation of the ECP) as in need of restoration and/or erosion control measures may have healed themselves and not require any action by the time construction of #P06-01508-ECPA begins. Additionally, there may be new areas in need of restoration and/or erosion control that did not exist in spring 2006.













As currently proposed and described above, stream restoration activities would involve the removal of eight existing dry road-stream crossings across Milliken Creek, and the removal of three additional crossings across a tributary to Milliken Creek. Stone weirs would be constructed in several locations across Milliken Creek and its tributaries. Weak portions of existing stream banks would be repaired and supported, including at the spillway of the existing onsite reservoir.

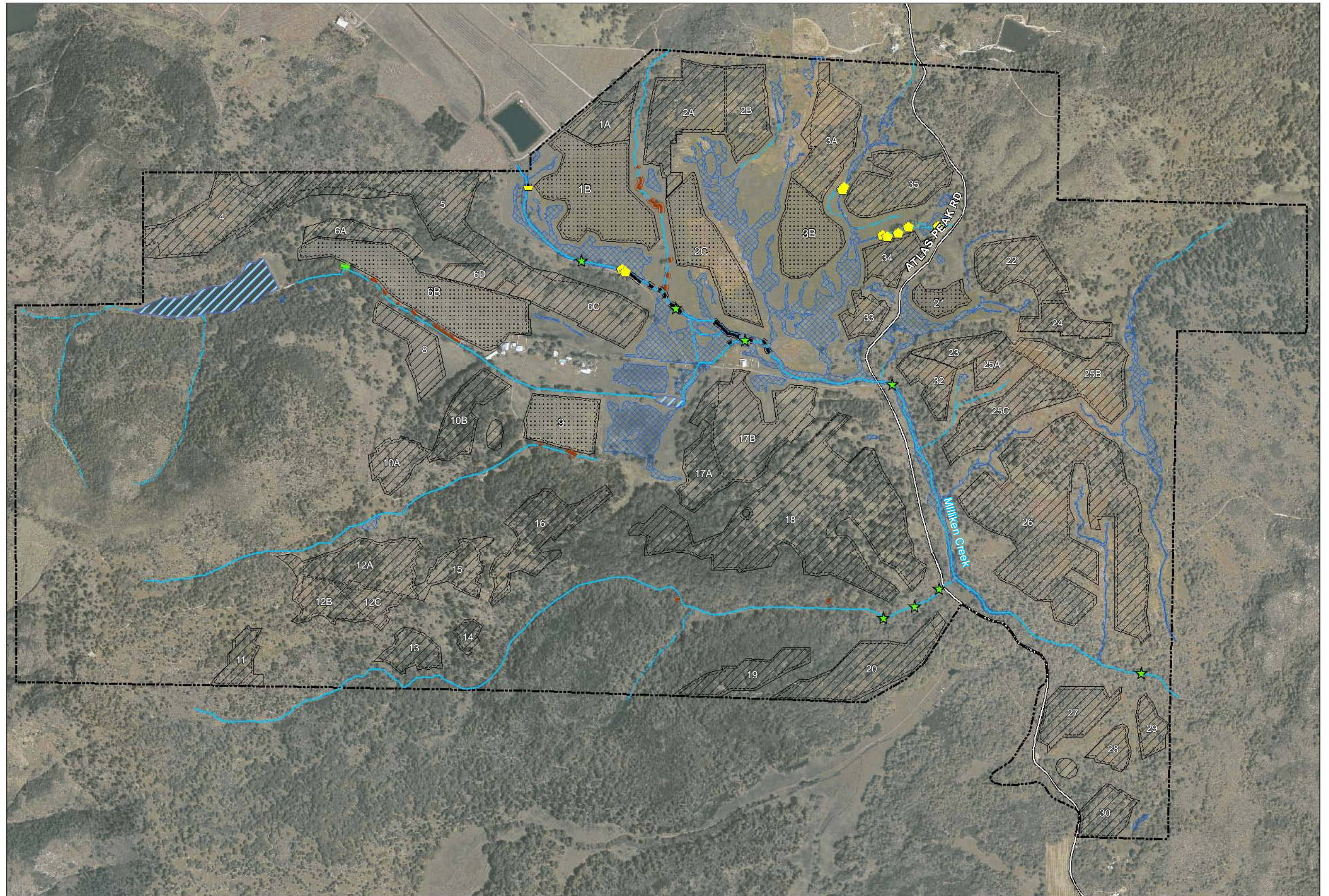
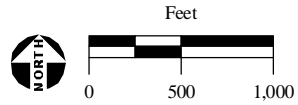
The removal of cattle access to the streams is proposed as part the project, which would allow for effective natural restoration of streams in most areas. Restoration activities on other streams could include removing existing concrete and riprap and/or riparian vegetation enhancement by supplemental seeding and mulching.

#### 3.4.1-7 TREE MANAGEMENT

Development of the approximately 459 gross acres proposed would result in removal of approximately 289 acres of oak woodlands and approximately 170 acres of other cover

**LEGEND**

-  Property Boundary
-  USGS Streams
-  Other Drainages
-  Wetlands
- Stream Restoration
  -  Proposed Stone Weir
  -  Proposed Abandoned Rocked Water Crossing
  -  Proposed Bank Repair Slope Bank, Seed & Mulch
  -  Proposed Bank Repair Rock Armor
  -  Proposed Bank Repair Seed & Mulch
- Proposed Vineyard Blocks
  -  Slopes Greater Than 5% and Included in ECPA
  -  Slopes Less Than 5% and not Included in ECPA
  -  Vineyard Avenues



types, which include grassland and non-oak woodlands. The total removal of approximately 459 acres of existing cover represents approximately 29 percent of the project site cover. Approximately 520 acres have been identified as tree management areas (**Figure 3-12**). Tree management would include planting trees, thinning existing trees for better health and regeneration, and other management activities deemed appropriate for the project site by a Registered Professional Forester.

### **3.4.2 VINEYARD LAYOUT AND INSTALLATION**

The proposed vineyard areas (on slopes greater than and less than five percent) would consist of 46 vineyard blocks ranging in size from 1.1 to 48.4 net acres. Vineyard avenues would be constructed around each block, resulting in gross acreages for each of the 46 blocks ranging from 1.6 to 55.3 gross acres. Vine rows would be planted approximately 5.5 to 6.0 feet apart, with three to four feet between the vines. All disturbed areas would be planted with a vegetative cover crop, with cover maintained from 75 to 80 percent.

With the implementation of #P06-01508-ECPA, a substantial amount of existing vegetation would be removed. Burning of trees and brush would be kept to a minimum. The soil would be cultivated to prepare it for planting, trenches would be dug and irrigation pipelines would be installed, a trellis and drip irrigation system would be installed, the vine rows would be laid out, and temporary erosion control measures would be installed. Wildlife habitat areas and movement corridors would be maintained on the Circle S Ranch by installing new wildlife fencing, vehicle gates, man/deer gates, and critter culverts, as detailed in **Figure 3-13** (corridors are discussed in **Chapter 4.2 Biological Resources**). The movement corridors include Milliken Creek and several of the unnamed tributaries, wetlands, ridges, open fields, and dense tree canopy. There are four existing cattle troughs and two developed springs that would be maintained for wildlife watering (**Figures 3-5 and 3-6**).

### **3.4.3 VINEYARD OPERATION AND MAINTENANCE**

Operation and maintenance of the vineyard includes: pruning; pest, disease and weed control; mowing; vine management; irrigation; fertilization; and harvesting activities. Other operational activities include the maintenance of the irrigation system, soil and plant testing, fruit testing, and inspection and maintenance of the erosion control measures.

Operation and maintenance of the proposed project would be consistent with operational activities associated with the existing vineyard on the project site. Fertilizers are applied up to five times per year through the drip irrigation system. Weed control is applied up to three times a year using the spray method. Mildew control is applied up to six times a year using



**LEGEND**

Property Boundary

USGS Streams

Other Drainages

Wetlands

Existing Reservoir

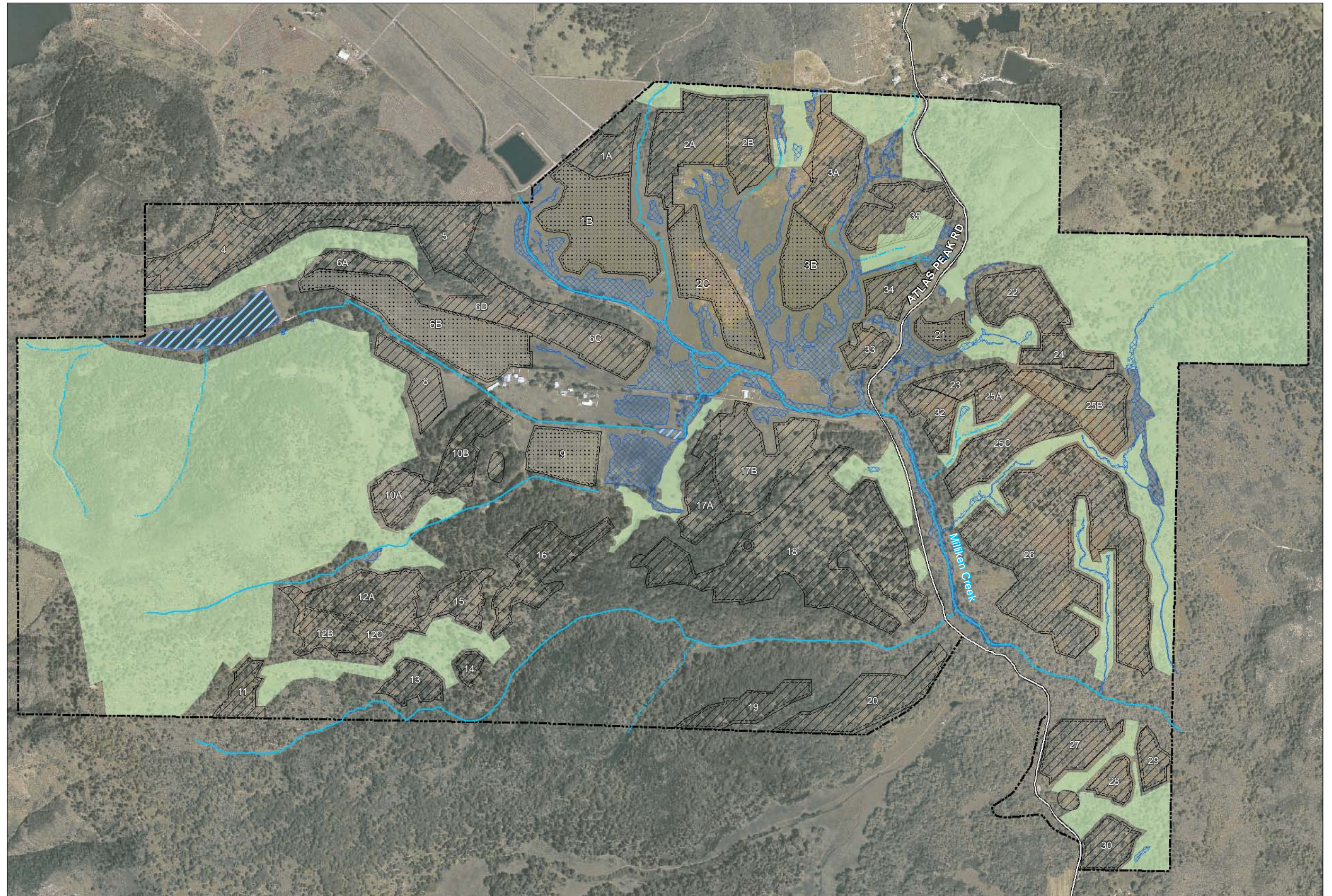
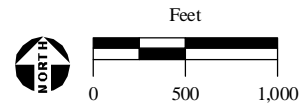
Tree Management Areas (520 acres)

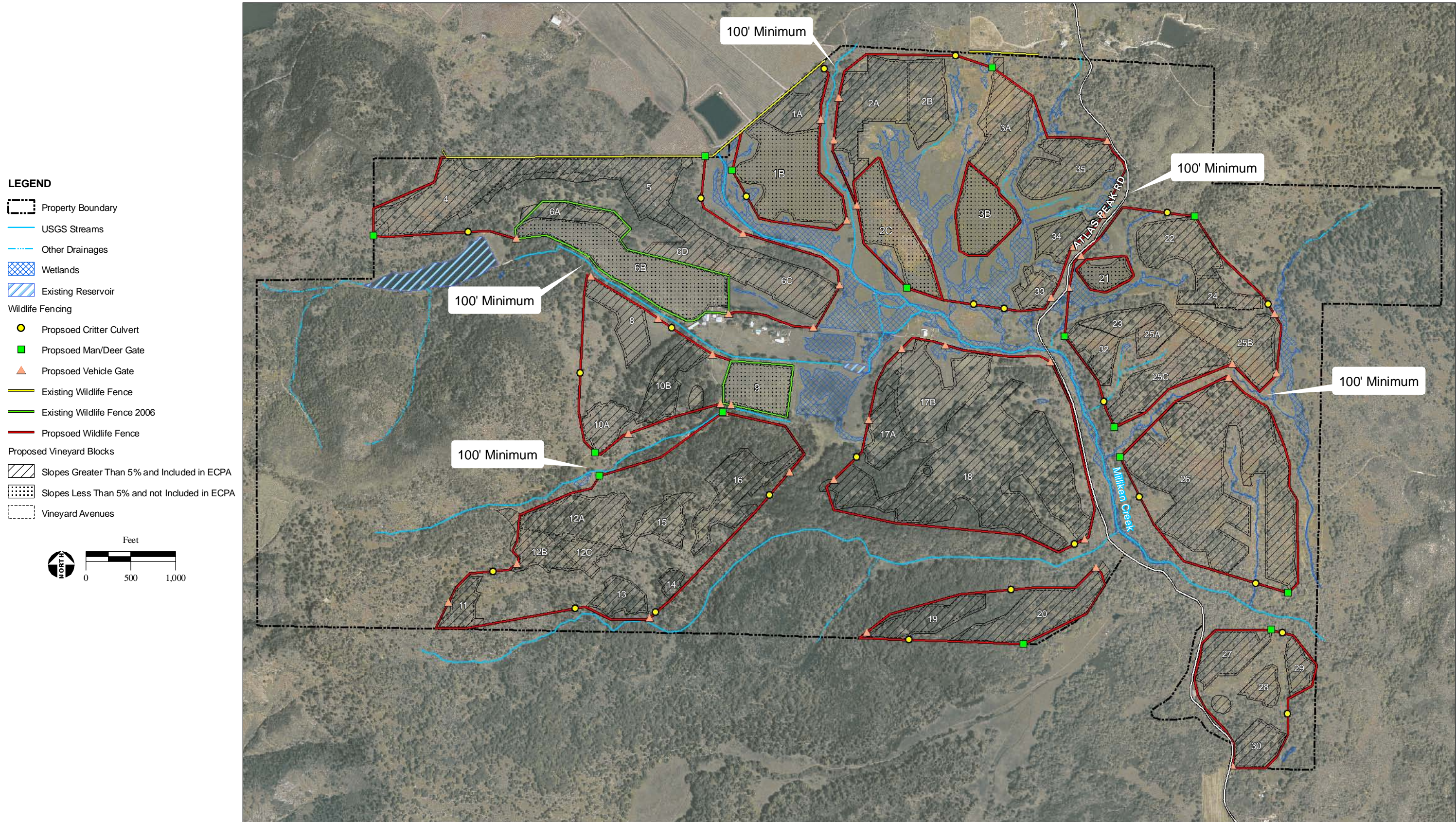
**Proposed Vineyard Blocks**

Slopes Greater Than 5% and Included in ECPA

Slopes Less Than 5% and not Included in ECPA

Vineyard Avenues





**Figure 3-13**  
Proposed Wildlife Fencing

the spray method. Fungicides are applied three to four times a year using the spray method. A rodenticide is applied up to five times a year using the broadcasting method. Integrated Pest Management (IPM) techniques would be used to the greatest extent possible to limit the use of pesticides on the vineyard. IPM techniques include permanent cover crops, beneficial insects, and chemical pesticides and herbicides employed only as a last resort. Mowing would occur between March and June each year. Harvest would last from 45 to 60 days each year.

Wind machines would be used up to five consecutive nights typically one to three times a year, typically during the hours of 12 A.M. to 7 A.M. Irrigation pipelines would be installed to transport water from the wells/tanks to the vineyard areas. These pipelines shall generally be located within roadways, vineyards and vineyard avenues. Where they are not located within these areas, disturbed ground shall be seeded and mulched in accordance with the ECP.

#### **3.4.4 WORKERS, EQUIPMENT AND DURATION**

Implementation of the project is anticipated to be completed within one year. The typical construction hours would be 7 A.M. to 5 P.M. Monday through Saturday. Sufficient equipment, labor, and materials would be committed and transported to the project site prior to the commencement of construction to attempt to complete construction by September 15<sup>th</sup>. Once equipment is transported to the project site it would remain there until implementation is completed. It is estimated that approximately 50 to 75 workers would be required between April 1<sup>st</sup> and September 15<sup>th</sup> for project implementation. From September 15<sup>th</sup> through March, an estimated 6 to 10 workers would be needed onsite per day for maintenance activities, including maintenance of erosion control measures. Necessary construction equipment is described in **Table 3-4**.

Vineyard operations would be carried out over three distinct seasons. The pruning season would begin on or about the first of January and end the first week of April. Pruning of the 405 net acres of vineyard (including the existing 27 acres) is estimated to require approximately 24 to 30 workers. The “suckering” season would consist of manipulating growth through selective pruning of canes and shoots, and would begin the first week of April and end the second week of July. Suckering of the 405 net acres of vineyard is estimated to require approximately 24 to 30 workers. Harvest would begin about the second week of August and end around the second week of October. Harvest of the 405 net acres of vineyard would require approximately 60 to 80 workers. The typical operation hours would be 7 A.M. to 5 P.M. Monday through Saturday with night time operations for spraying, harvesting and frost protection from 10 P.M. to 8 A.M.

**TABLE 3-4**  
CONSTRUCTION EQUIPMENT

Equipment	Quantity
Fill tanks	2
965 loaders	8
350 excavators	4
320 excavators	2
D10/11 bulldozers (ripping)	4
D9 Bulldozers (clearing)	4
Off road dump trucks	12
Drum grinders	2
4,000 gallon water trucks	4
Tractors	10
ATVs	10

Source: PPI Engineering, 2007.

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## **CHAPTER 4.0**

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### **ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION MEASURES**

## 4.1 AIR QUALITY

### 4.1.1 SETTING

The primary factors that determine air quality are the locations of air pollutant sources and the amounts of pollutants emitted. Meteorological and topographical conditions, however, also are important. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants.

The Circle S Ranch project is located in the hills southeast of the City of Yountville, in Napa County, California. Napa Valley is a long, narrow valley running north to south between two ridges formed within the coastal mountains that have an average ridgeline height of about 2,000 feet. Some peaks approach 3,000 to 4,000 feet in height. Up-valley winds (from the south during the day) and down-valley winds (from the north during the night) result because of the surrounding terrain. The project site rests at the base of the Foss Valley and has an elevation of approximately 1,400 feet. Topography in the County is defined by the Napa Valley and surrounding upland areas, which contain smaller valley areas.

Napa Valley has a high potential for natural air pollution due to diminished ventilation caused by the terrain. Locally and regionally generated pollutants can be transported by the prevailing winds northward into the Napa Valley, often trapping and concentrating the pollutants under stable conditions. The local up-valley and down-valley flows set up by the surrounding mountains may also recirculate pollutants, contributing to a buildup of pollutants. Napa Valley has generally good air quality due to the relatively light development of much of the valley, despite this high natural potential for air pollution.

#### 4.1.1-1 SENSITIVE RECEPTORS

In general, some receptors are considered more sensitive than others to air pollutants. The reasons for greater than average sensitivity include pre-existing health problems, proximity to the emissions source, or duration of exposure to air pollutants. Land uses such as schools, hospitals, and convalescent homes are considered to be sensitive to poor air quality. This is because infants and children, the elderly, and people with health afflictions, especially respiratory ailments, are more susceptible to respiratory infections and other air-quality-related health problems than the general public. Residential areas are also considered to be sensitive to air pollution, because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present.

The Soda Canyon Elementary School is located on Soda Canyon Road approximately four miles southwest of the project site and Yountville Elementary School is located on Yount Street approximately five miles to the west of the project site. There are six residences located on the Circle S Ranch property and several scattered offsite residences in the vicinity of the property, including one residence approximately 300 feet southeast of proposed Block 30 and another approximately 700 feet northeast of proposed Block 3A. The closest onsite residences are located approximately 100 feet from existing Block 6B (on slopes less than five percent), approximately 300 feet from proposed vineyard Block 6C and approximately 300 feet from proposed Block 10B.

#### 4.1.1-2 POLLUTANTS OF CONCERN

##### **Ozone**

Photochemical reactions involving reactive organic gases (ROG) and oxides of nitrogen ( $\text{NO}_x$ ) resulting from the incomplete combustion of fossil fuels are the largest source of ground-level  $\text{O}_3$ . Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. As a photochemical pollutant,  $\text{O}_3$  is formed only during daylight hours under appropriate conditions, but is destroyed throughout the day and night.  $\text{O}_3$  is considered a regional pollutant, as the forming reaction occurs over time downwind from the sources of the emissions.

##### **Particulate Matter ( $\text{PM}_{10}$ and $\text{PM}_{2.5}$ )**

Particle pollution is a mixture of microscopic solids and liquid droplets suspended in air. This pollution, also known as particulate matter, is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, soil or dust particles, and allergens (such as fragments of pollen or mold spores). The size of particles is directly linked to their potential for causing health problems. Small particles less than 10 micrometers ( $\mu\text{m}$ ) in diameter pose the greatest problems, because they can travel deep into lungs ( $\text{PM}_{10}$ ) and the bloodstream ( $\text{PM}_{2.5}$ ). Exposure to such particles can affect the lungs and heart. Larger particles are of less concern, although they can irritate the eyes, nose, and throat.

#### 4.1.2 REGULATORY FRAMEWORK

##### 4.1.2-1 PLANS, POLICIES, AND STANDARDS

Regulation of air pollution is achieved through both national and state ambient air quality standards and emission limits for individual sources of air pollutants. As required by the

Federal Clean Air Act (FCAA), the U.S. Environmental Protection Agency (USEPA) has identified “criteria pollutants” and established National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. NAAQS have been established for ozone (O<sub>3</sub>), carbon monoxide (CO), nitrogen oxide (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), suspended particulate matter less than or equal to 10 microns (PM<sub>10</sub>), suspended particulate matter less than or equal to 2.5 microns (PM<sub>2.5</sub>), and lead (Pb).

California has adopted more stringent ambient air quality standards for most of the criteria air pollutants (referred to as California Ambient Air Quality Standards or CAAQS). Because of the unique meteorological conditions in California, there is considerable diversity between the CAAQS and NAAQS currently in effect in California. **Table 4.1-1** presents both state and national standards.

**TABLE 4.1-1**  
STATE AND NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	SAAQS	NAAQS <sup>b</sup>
Ozone (O <sub>3</sub> )	1 hour	0.09 ppm	N/A
	8 hour	0.070 ppm	0.08 ppm
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm
	8 hour	9.0 ppm	9 ppm
Nitrogen Dioxide (NO <sub>2</sub> )	1 hour	0.25 ppm	N/A
	Annual Mean	N/A	0.053 ppm
Sulfur Dioxide (SO <sub>2</sub> )	1 hour	0.25 ppm	N/A
	3 hour	N/A	0.5 ppm <sup>1</sup>
	24 hour	0.04 ppm	0.14 ppm
	Annual Mean	N/A	0.030 ppm
Respirable Particulate Matter (PM <sub>10</sub> )	24 hour	50 µg/m <sup>3c</sup>	150 µg/m <sup>3</sup>
	Annual Mean	20 µg/m <sup>3</sup>	N/A
Fine Particulate Matter (PM <sub>2.5</sub> )	24 hour	N/A	35 µg/m <sup>3</sup>
	Annual Mean	12 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>
Sulfates	24 hour	25 µg/m <sup>3</sup>	N/A
Lead (Pb)	30 day	1.5 µg/m <sup>3</sup>	N/A
	Calendar Quarter	N/A	1.5 µg/m <sup>3</sup>
Hydrogen Sulfide	1 hour	0.03 ppm	N/A

Notes: ppm = parts per million by volume; µg/m<sup>3</sup> = micrograms per cubic meter.

N/A=Not Applicable

<sup>1</sup> Secondary Standard.

Source: CARB, 2006a

Under amendments to the FCAA, the USEPA has classified air basins, or portions thereof, as either “attainment” or “non-attainment” for each criteria air pollutant, based on whether or not the NAAQS have been achieved. In 1988, the State legislature passed the California Clean Air Act (CCAA), which is patterned after the FCAA to the extent that it also requires areas to be designated as “attainment” or “non-attainment”, but with respect to the SAAQS



rather than the NAAQS. Thus, areas in California have two sets of attainment/non-attainment designations for each criteria pollutant: one set with respect to the national standards and one set with respect to the State standards.

The FCAA also requires non-attainment areas to prepare air quality plans that include strategies for achieving attainment. Air quality plans developed to meet the NAAQS are referred to as State Implementation Plans (SIPs). The CCAA also requires plans for non-attainment areas (except for PM<sub>10</sub>) with respect to the State standards. Thus, just as areas in California have two sets of designations, many also have two sets of planning requirements; one to meet federal requirements relative to the NAAQS and one to meet requirements relative to the CAAQS.

The USEPA is responsible for implementing the myriad programs established under the FCAA, such as establishing and reviewing the national ambient air quality standards and judging the adequacy of SIPs, but has delegated the authority to implement many of the federal programs to the states while retaining an oversight role to ensure that the programs continue to be implemented.

The California Air Resources Board (CARB), California's state air quality management agency, regulates mobile emissions sources and oversees the activities of regional/county air districts. CARB is responsible for establishing emissions standards for on-road motor vehicles sold in California. The Bay Area Air Quality Management District (BAAQMD) is the regional agency empowered to regulate air pollutant emissions from stationary sources in the Bay Area. Both agencies regulate air quality through their permit authority and through their planning and review activities.

#### 4.1.2-2 AIR QUALITY DATA

Under the NAAQS, the Bay Area is currently a non-attainment area for 8-hour O<sub>3</sub> and is designated maintenance for CO. Under the CAAQS, the Bay Area is a non-attainment area for O<sub>3</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> (CARB, 2006b).

CARB maintains several ambient air quality monitoring stations within the BAAQMD that provide information on the average concentrations of criteria air pollutants in the region. Monitored ambient air pollutant concentrations reflect the number and strength of emissions sources and the influence of topographical and meteorological factors. The closest monitoring station to the project site is located in the City of Napa, at Jefferson Street near Central Avenue, about nine miles southwest of the project site. It should be noted that the monitoring station is located in an urban area while the project site is located in a relatively rural area. **Table 4.1-2** presents a three-year summary of ambient air quality monitoring

data from the Napa station and compares ambient air pollutant concentrations of O<sub>3</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub> to CAAQS and NAAQS.

**TABLE 4.1-2**  
AIR QUALITY DATA SUMMARY FOR NAPA VALLEY 2003-2005

Pollutant/Standard	Standard	Days Standard Exceeded <sup>1</sup> in:		
		2004	2005	2006
O <sub>3</sub>	Federal 8-Hour	0	0	0
O <sub>3</sub>	State 8-Hour	0	0	2
O <sub>3</sub>	State 1-Hour	0	0	1
PM <sub>10</sub>	State 24-Hour	1	*	1
PM <sub>2.5</sub>	State 24-Hour	*	*	*

<sup>1</sup> An exceedance is not necessarily a violation.

\* Insufficient Data.

Source: CARB, 2006c

The ambient air quality standards are met at the monitoring location, with the exception of the SAAQS for 1- and 8-hour O<sub>3</sub> in 2006 and SAAQS for 24-hour PM<sub>10</sub> as show in **Table 4.1-2**.

**4.1.2-3 CLIMATE CHANGE**

It is anticipated that the average global temperature could rise 0.6 to 4.0 °C (33.0 to 39.2 °F) between the years 2000 and 2100 (IPCC, 2007). The extent to which human activities affect global climate change is a subject of considerable scientific debate. While many in the scientific community contend that global climate variation is a normal cyclical process that is not necessarily related to human activities, the Intergovernmental Panel on Climate Change (IPCC) report identifies anthropogenic greenhouse gases (GHGs) as a contributing factor to changes in the Earth’s climate (Michaels, 2004; IPCC, 2007).

The IPCC modeling estimates that anthropogenic CO<sub>2</sub> in the lower atmosphere has increased by approximately 31 percent since 1750. At the same time, average temperature in the lower atmosphere has increased approximately 0.6 to 0.8 °C (33.0 to 33.4 °F). Due to the challenges inherent in modeling the complexities of the Earth’s climate, the proportional importance of anthropogenic activities as opposed to natural feedback systems is exceptionally difficult to establish. Nonetheless, the IPCC concludes that “Most of the observed increase in globally-averaged temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic GHG concentrations.” This EIR assumes that an increase in anthropogenic GHG concentration is in fact contributing to global warming.

IPCC theorizes that a continuation of this warming trend could have profound implications, including flooding, erratic weather patterns, increased sea levels, and reduced arctic ice. The IPCC projects a number of future GHG emissions scenarios leading to a varying

severity of impacts on the environment and the global economy. According to the 2007 IPCC report, if anthropogenic GHG continue to increase in the atmosphere there will be a point at which the above impacts would become irreversible, this point is commonly referred to as the “tipping point.” Although the 2007 IPCC report states the tipping point may be as far off as 20 years, some experts contend the tipping point has already been reached.

**Table 4.1-3** illustrates the estimated State contribution to the global increase in GHG emissions. The 2020 estimates assume current GHG emission practices. As shown, without modifications in human activities or the introduction of new technologies, GHG emissions are anticipated to increase.

**TABLE 4.1-3**  
GLOBAL GREENHOUSE GAS EMISSIONS

Regions	Estimated GHG Emissions
	Million metric tons per year of CO <sub>2</sub> e <sup>1</sup>
<b>1990</b>	
Global Emissions	626,395
California Emissions	427
<b>2020</b>	
Global Emissions	882,246
California Emissions	600

<sup>1</sup>Carbon Dioxide Equivalent  
Source: CARB, 2007; IPCC. 2007

In 1997 the Council on Environmental Quality (CEQ) circulated an internal draft memorandum (CEQ, 1997) on how global climate change should be treated for the purposes of environmental impact analyses. The CEQ draft memorandum advised federal lead agencies to consider how proposed actions subject to federal regulations would affect sources and sinks of greenhouse gases (GHGs). During the same year, CEQ released guidance on the assessment of cumulative effects in environmental impact analyses documents (CEQ, 1997). Consistent with the CEQ draft memorandum, climate change impacts were offered as one example of a cumulative effect.

California has been a leader among the states in outlining and aggressively implementing a comprehensive climate change strategy that is designed to result in a substantial reduction in total statewide GHG emissions in the future. California’s climate change strategy is multifaceted and involves a number of state agencies implementing a variety of state laws and policies. The laws and policies are summarized below.

**Assembly Bill 32 (AB 32)**

Signed by the Governor on September 27, 2006, AB 32 codifies a key requirement of Executive Order (EO) S-3-05. EO S-3-05 established the following statewide emission reduction targets: reduce GHG emissions to 2000 levels by 2010, reduce GHG emissions to

1990 levels by 2020, and reduce GHG emissions to 80 percent below 1990 levels by 2050. AB 32 tasks CARB with monitoring state sources of GHGs and designing emission reduction measures to comply with the law's emission reduction requirements. However, AB 32 also continues the Climate Action Team's (CAT) efforts to meet the requirements of EO S-3-05 and states that the CAT should coordinate overall state climate policy.

In order to accelerate the implementation of emission reduction strategies, AB 32 requires that CARB identify a list of discrete early action measures that can be implemented relatively quickly. In October 2007, CARB published a list of early action measures that it estimated could be implemented and would serve to meet about a quarter of the required 2020 emissions reductions (CARB, 2006d). In order to assist CARB in identifying early action measures, the CAT published a report in April 2007 that updated their 2006 report and identified strategies for reducing GHG emissions (CAT, 2007). In its October 2007 report, CARB cited the CAT strategies and other existing strategies that may be utilized in achieving the remainder of the emissions reductions. AB 32 requires that CARB prepare a comprehensive "scoping plan" that identifies all strategies necessary to fully achieve the required 2020 emissions reductions. According to AB 32 this scoping plan must be in place no later than January 1, 2009. CARB has initiated preparation of the scoping plan and plans on adopting a final plan in late 2008 (CARB, 2007).

### **Senate Bill 97 (SB 97)**

Signed by the governor on August 24, 2007, SB 97 requires that no later than July 1, 2009, the state Office of Planning and Research (OPR) prepare CEQA guidelines for evaluating the effects of GHG emissions and for mitigating such effects. The Resources Agency is required to certify and adopt these guidelines by January 1, 2010. It is anticipated that this guidance would establish standardized significance criteria for the purposes of assessing project impacts pursuant to CEQA. In the absence of specific guidelines, OPR has referred CEQA document authors to existing general guidelines, examples of impact analyses in existing CEQA documents (which OPR acknowledges ranges greatly from little analysis due to the speculative nature of climate change impact analysis to the calculation of GHG emissions and the inclusion of mitigation), and to a variety of white papers on the subject of GHG impact analysis, including one prepared by the Association of Environmental Professionals (AEP, 2007).

### **Governor's Office of Planning and Research – Technical Advisory**

The Governor's Office of Planning and Research (OPR) released a Technical Advisory on June 19, 2008, titled CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act Review. The Technical Advisory provides informal, interim guidance for analyzing climate change impacts in advance of comprehensive

amendments to the CEQA Guidelines to be prepared pursuant to SB 97, and scheduled for release on or before January 1, 2010. The Technical Advisory provides the following guidance when providing climate change analyses in a CEQA document:

- Each lead agency needs to develop its own approach to performing climate change analyses.
- Lead agencies should determine whether GHGs are generated by the project and, if they are, they must be quantified.
- A project's impact can either be cumulatively or individually significant, but climate change is "ultimately a cumulative issue."
- A lead agency must provide mitigation measures to avoid, reduce, or otherwise mitigate the impacts of GHG emissions.
- There is no standard format for including the analysis in a CEQA document.
- A less than significant impact can be presented using mitigation measures.
- The Technical Advisory outlines mitigation measures.

Climate change is a global phenomenon attributable to the sum of all human activities and natural processes. The climate change analysis presented in this EIR is consistent with the guidance provided to-date by OPR and CARB. As directed by the OPR Technical Advisory, this analysis considers whether project emissions are individually or cumulatively significant. Based on the proposed project's GHG emissions (see **Section 4.1.3**), it was determined that specific climate change impacts could not be attributed to the proposed development. As such, project impacts are most appropriately addressed in terms of the incremental contribution to a global cumulative impact. This approach is consistent with the view articulated in the following quote provided in the IPCC, "difficulties remain in attributing temperature on smaller than continental scales and over time scales of less than 50 years. Attribution at these scales, with limited exceptions, has not yet been established (IPCC, 2007)." For an analysis of cumulative impacts related to climate change, refer to **Chapter 6.0**.

### 4.1.3 IMPACTS AND MITIGATION MEASURES

#### 4.1.3-1 SIGNIFICANCE CRITERIA

For the purposes of this analysis, the proposed project would have a significant impact if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any ambient air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment;
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

For construction related emissions of criteria air pollutant, the BAAQMD recommends that significance be based on control measures for PM<sub>10</sub> fugitive dust emissions. If appropriate mitigation measures were implemented to control PM<sub>10</sub> emissions, then the impact would be less than significant. The appropriate mitigation measures are outlined in the BAAQMD CEQA guidance document (BAAQMD, 1999). The BAAQMD guidelines indicate that construction-related PM<sub>10</sub> emissions are accounted for in the District's emission inventory that is the basis for the regional air quality plans; thus, construction related emissions will not impede attainment or maintenance of O<sub>3</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> standards in the Bay Area. Therefore, construction-related emissions of criteria air pollutants do not need to be further analyzed.

#### 4.1.3-2 IMPACTS AND MITIGATION MEASURES

**Impact 4.1-1:** Earthmoving and vegetation burning activities associated with implementation of the proposed project would have the potential to cause nuisance related to fugitive dust and other emissions. This is a potentially significant impact.

Conversion of the existing landscape to vineyard requires clearing of vegetation and earthmoving activities, which expose bare soil to wind erosion, thereby generating fugitive dust. The project site is located in a rural area with few receptors; nevertheless, site preparation activities would have the potential to cause air quality impacts to the area.

The burning of cleared vegetation is another possible source of temporary emissions during site preparation. Such burning is strictly regulated by the BAAQMD under Regulation 5 Rules, 401.1, 401.2, 403, and 406.

**Mitigation Measure 4.1-1:** The owner shall implement a fugitive dust abatement program during the construction of #P06-01508-ECPA, which shall include the following elements:

- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard.
- Cover all exposed stockpiles.
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent streets.
- Limit traffic speeds on unpaved roads to 15 miles per hour (mph).
- Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.
- Any burning of cleared vegetation shall be conducted according to the rules and regulations of the BAAQMD's Regulation 5 (BAAQMD, 2006). Prior notification to BAAQMD shall be made by submitting an Open Burning Prior Notification Form to BAAQMD's office in San Francisco.

The mitigation measure discussed above is in addition to the permanent erosion control measures specified in #P06-01508-ECPA, which includes: establishing a permanent no till cover crop on all disturbed areas and applying straw mulch over disturbed areas. The permanent erosion control measures avoid the creation of nuisance dust and PM<sub>10</sub> during operation of the vineyard and reduce this potentially significant impact to a less-than-significant level.

**Impact 4.1-2:** Operation of the proposed project would attract additional vehicles to the project site, resulting in new regional emissions; however, new emissions would not be substantial and a less-than-significant impact would result.

Maximum operational emissions would occur during harvest season. An estimated 160 one-way employee trips would occur during this season, with a one-way trip length of approximately 15 miles. Grape trucks would make an additional eight one-way trips per day; with a one-way trip length of approximately 15 miles. Air quality modeling was performed for the proposed project using the URBEMIS 2007 air quality-modeling program, output files are provided in **Appendix C**. URBEMIS estimated the employee and truck trip emissions associated with the proposed project. **Table 4.1-4** shows the operational emissions from employee and grape haul trips associated with the proposed project, and compares the total emissions for the proposed project to the BAAQMD thresholds.

**TABLE 4.1-4**  
OPERATIONAL INCREASE IN EMISSIONS FROM VINEYARD EXPANSION

Source	ROG	NOx	PM <sub>10</sub>	PM <sub>2.5</sub>
	Pounds per Day			
Grape Haul Truck and Employee Trips	7.78	2.85	4.22	0.80
BAAQMD Significance Thresholds	80	80	N/A	N/A
Threshold Exceeded	No	No	N/A	N/A

Source: URBEMIS, 2007; AES, 2008.

The proposed project would not exceed the BAAQMD thresholds of significance; therefore, air quality impacts due to operations is less than significant.

**Mitigation Measure 4.1-2:** No mitigation is required.

**Impact 4.1-3:** The proposed project would slightly increase traffic volumes and congestion levels on local roadways, resulting in changes to CO concentrations; however, changes in CO concentrations would not be substantial and a less-than-significant impact would result.

The proposed project is in a designated maintenance area for CO; the Napa Valley region has relatively low background levels of CO compared to other parts of the Bay Area. CO disperses rapidly into the atmosphere, which makes it a local pollutant. High concentrations of CO from vehicles generally occur when a large number of vehicles are idling for more than 35 seconds; this generally occurs at signaled intersections. There are two signaled intersections within the vicinity of the project area: State Route 121 (SR-121)/Atlas Peak Road and Silverado Country Club/Atlas Peak Road. Atlas Peak Road is at 60 percent capacity at SR-121 and only 12 percent capacity at Silverado County Club; thus, both intersections are free flowing with little or no standing traffic. Idling of construction equipment is included in the BAAQMD's CEQA criteria, as discussed in Section 4.1.3-1 above. Therefore, the proposed project's affect on CO concentrations is considered less than significant.

**Mitigation Measure 4.1-3:** No mitigation is required.

**Impact 4.1-4:** Project emissions have the potential to cause distress to sensitive receptors. However, new emissions would not be substantial and a less-than-significant impact would result.

Some receptors are considered more sensitive than others to air pollutants as discussed in Section 4.1.1-1 above. Construction emissions are temporary and the BAAQMD states that if PM<sub>10</sub> is mitigated, no NAAQS or CAAQS would be violated (see Section 4.1.2-1 and **Impact** and **Mitigation Measure 4.1-1** above). The proposed project includes development of 490 acres of vineyard and disturbed areas; the area is zoned Agricultural Watershed. The surrounding area consists mainly of open space and agricultural lands. Operational emissions would not increase significantly with the proposed project and would not exceed BAAQMD significance thresholds (see **Table 4.1-3** and **Impact 4.1-2** above). There are also no schools, hospitals or convalescent homes located close enough to the project site that would result in them being affected by construction or operational emissions from the proposed project; the closest off-site residences are located approximately 300 feet and 700 feet from proposed Block 30 and proposed Block 3A, respectively. Potential distress to sensitive receptors is considered less than significant.



**Mitigation Measure 4.1-4:** No mitigation is required.

**Impact 4.1-5:** Project operation could result in operational odors. However, odors from operation would not be substantial and a less-than-significant impact would result. During installation of P06-01508-ECPA and subsequent vineyard operations, various diesel-powered vehicles and equipment used on the project site would create odors. However, these sources are mobile and transient in nature, and the distance of approximately 100 feet and 300 feet to the nearest onsite (from existing Block 6B and proposed Block 30, respectively), and 300 feet and 700 feet to the nearest off-site residences (from proposed Block 30 and proposed Block 3A, respectively) would provide for dilution of odor-producing constituent emissions. These odors would dissipate rapidly and are temporary. Because of this, and the distance between the project site and the nearest sensitive receptor, odors from vehicles and equipment are unlikely to be noticeable beyond the area of operation. Other odors that may be generated during project operation include the potential application of wettable sulfur and sulfur dust to control mildew. These odors would be temporary and would occur at a substantial distance from rural receptors (greater than 100 and 300 feet from nearest onsite and offsite receptors, respectively). This is considered a less-than-significant impact.

**Mitigation Measure 4.1-5:** No mitigation is required.

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## 4.2 BIOLOGICAL RESOURCES

References used in the preparation of this section include information from the following resources and are on file at Napa County's Conservation, Development and Planning Department office:

- Scientific texts: Bird Identification – Ehrlich, 1988; Sibley, 2000, 2003; Plant Identification – Baldwin et al., 2003; 1991; Hickman, 1993a and 1993b; California Department of Fish and Game (CDFG), 2003; and Habitat Descriptions and Requirements – Barbour et al., 2007; Holland, 1986; Stromberg et al., 2007; Zeiner et al., 1990;
- Aerial photographs (1993, 2002, and 2005);
- Napa County Baseline Data Report (NCBDR), Napa County, (2005);
- National Wetland Inventory (NWI) map for “Yountville, California” and “Capell Valley, California” 7.5 minute topographic quadrangles (USFWS, 2007a);
- Records from the California Natural Diversity Database (CNDDB, 2005 and California Native Plant Society's (CNPS) Electronic Inventory (CNPS, 2005) centered around the “Capell Valley, California” and “Yountville, California” U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles, and including “Chiles Valley, California”, “Fairfield North, California”, “Lake Berryessa, California”, “Monticello Dam, California”, “Mt. George, California”, “Mt. Vaca, California”, “Napa, California”, “Rutherford, California”, “Sonoma, California” and “St. Helena, California” USGS 7.5-minute topographic quadrangles.
- A list of special status plant and animal species with potential to occur in the “Capell Valley, California”, “Chiles Valley, California”, “Fairfield North, California”, “Lake Berryessa, California”, “Monticello Dam”, California”, “Mt. George, California”, “Mt. Vaca, California”, “Napa, California”, “Rutherford, California”, “Sonoma, California” and “St. Helena, California”, “Yountville, California” U.S. Geological Survey 7.5-minute topographic quadrangles provided by the U.S. Fish and Wildlife Service (USFWS); and
- Biological studies performed on the project site (AES, 2007; Winfield, 2005 and 2006; Nix, 2006 and 2008; PPI, 2007).

Surveys performed in support of the biological studies are summarized in **Table 4.2-1**.

**TABLE 4.2-1**  
SUMMARY OF BIOLOGICAL FIELD SURVEYS

DATE	PURPOSE	PERSONNEL	ESTIMATED HOURS
January 24, 2005	Preliminary Wetland Site Assessment	Ted P. Winfield & Associates	Unknown
January 25, 2005	Preliminary Wetland Site Assessment	Ted P. Winfield & Associates	Unknown
May 2, 2005	Wetlands Delineation	Ted P. Winfield & Associates	Unknown
May 3, 2005	Wetlands Delineation	Ted P. Winfield & Associates	Unknown
May 10, 2005	Wetlands Delineation	Ted P. Winfield & Associates	Unknown
May 13, 2005	Wetlands Delineation	Ted P. Winfield & Associates	Unknown
May 20, 2005	Wetlands Delineation	Ted P. Winfield & Associates	Unknown
June 7, 2005	Preliminary Wildlife Habitat Assessment	Biosearch Associates	Unknown
June 8, 2005	Preliminary Wildlife Habitat Assessment	Biosearch Associates	Unknown
June 8, 2005	Habitat & Vegetation Surveys	Ted P. Winfield & Associates	Unknown
June 9, 2005	Habitat & Vegetation Surveys	Ted P. Winfield & Associates	Unknown
May 15, 2006	Special Status Spp. & Plant Surveys	Ted P. Winfield & Associates	Unknown
May 16, 2006	Special Status Spp. & Plant Surveys	Ted P. Winfield & Associates	Unknown
June 7, 2006	Special Status Spp. & Plant Surveys	Ted P. Winfield & Associates	Unknown
June 8, 2006	Special Status Spp. & Plant Surveys	Ted P. Winfield & Associates	Unknown
April 20, 2007	<i>Calochortus pulchellus</i> , Special Status Spp. & Plant Surveys	AES: Sean Marquis & Jeb Bjerke	20
April 25, 2007	<i>Calochortus pulchellus</i> , Special Status Spp. & Plant Surveys	AES: Sean Marquis & Jeb Bjerke	20
April 26, 2007	<i>Calochortus pulchellus</i> , Special Status Spp. & Plant Surveys	AES: Sean Marquis & Jeb Bjerke	20
May 4, 2007	<i>Calochortus pulchellus</i> , Special Status Spp., Plant Surveys & <i>Desmocercus californicus dimorphus</i> (VELB)/Elderberry Surveys	AES: Steve Stringer & Jeb Bjerke	20
May 10, 2007	<i>Rana aurora draytonii</i> (CRLF) Site Assessments	AES: LaTisha Burnaugh & Steve Stringer	20
May 11, 2007	CRLF Site Assessments	AES: LaTisha Burnaugh & Steve Stringer	20
May 18, 2007	CRLF Site Assessments	AES: LaTisha Burnaugh & Steve Stringer	20
May 10, 2007	<i>Calochortus pulchellus</i> , Special Status Spp., Plant Surveys & VELB/Elderberry Surveys	AES: Sean Marquis & Jeb Bjerke	20
June 25, 2007	<i>Monardella villosa</i> ssp. <i>robusta</i> , Special Status Spp., Plant Surveys & VELB/Elderberry Surveys	AES: Adrienne Edwards & Sarah Shannon	20
June 27, 2007	<i>Monardella villosa</i> ssp. <i>robusta</i> , Special Status Spp., Plant Surveys & VELB/Elderberry Surveys	AES: Adrienne Edwards & Sarah Shannon	20

#### 4.0 ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION MEASURES

##### Biological Resources

DATE	PURPOSE	PERSONNEL	ESTIMATED HOURS
June 29, 2007	<i>Monardella villosa</i> ssp. <i>robusta</i> , Special Status Spp., Plant Surveys & VELB/Elderberry Surveys	AES: Adrienne Edwards & Sarah Shannon	20
July 2, 2007	<i>Monardella villosa</i> ssp. <i>robusta</i> , Special Status Spp., Plant Surveys & VELB/Elderberry Surveys	AES: Adrienne Edwards & Sarah Shannon	20
July 11, 2007	<i>Monardella villosa</i> ssp. <i>robusta</i> , Special Status Spp., Plant Surveys & VELB/Elderberry Surveys	AES: Adrienne Edwards & Jeb Bjerke	20
January 15, 2008	CRLF Surveys	AES: LaTisha Burnaugh, Jeb Bjerke, Kelly Buja & Sean Marquis	40
January 17, 2008	CRLF Surveys	AES: LaTisha Burnaugh, Jeb Bjerke, Kelly Buja & Sean Marquis	40
January 18, 2008	CRLF Surveys; Conference on VELB & Fairy Shrimp Surveys	AES: LaTisha Burnaugh, Jeb Bjerke, Kelly Buja & Sean Marquis	40
January 28, 2008	CRLF Surveys	AES: LaTisha Burnaugh, Jeb Bjerke, Bruce Casler & Charlotte Marks	40
January 29, 2008	CRLF Surveys	AES: LaTisha Burnaugh, Kelly Buja, Sean Marquis & Kristie Haydu	40
February 4, 2008	CRLF Surveys	AES: LaTisha Burnaugh, Jeb Bjerke, Kelly Buja & Sean Marquis	40
February 5, 2008	CRLF Surveys	AES: LaTisha Burnaugh, Jeb Bjerke, Kelly Buja & Charlotte Marks	40
February 11, 2008	CRLF Surveys	AES: LaTisha Burnaugh, Jeb Bjerke, Kelly Buja & Sean Marquis	40
February 12, 2008	CRLF Surveys	AES: LaTisha Burnaugh, Jeb Bjerke, Kelly Buja & Sean Marquis	40
March 17, 2008	CRLF Surveys	AES: LaTisha Burnaugh, Jeb Bjerke, Kelly Buja & Sean Marquis	40
March 18, 2008	CRLF Surveys	AES: LaTisha Burnaugh, Jeb Bjerke, Kelly Buja & Sean Marquis	40
March 24, 2008	CRLF Surveys	AES: LaTisha Burnaugh, Jeb Bjerke, Kelly Buja & Bruce Casler	40
March 25, 2008	CRLF Surveys	AES: LaTisha Burnaugh, Jeb Bjerke, Kelly Buja & Bruce Casler	40
July 11, 2008	Bird, Bat, and Badger Surveys	AES: Cliff Feldheim & Tina Greenawalt	16
July 15, 2008	CRLF Surveys	AES: Tina Greenawalt, Charlotte Marks, Kelly Buja, & Bruce Casler	40

DATE	PURPOSE	PERSONNEL	ESTIMATED HOURS
July 24, 2008	Wetland Crossings and Vegetation Verification	AES: Adrienne Edwards , Cliff Feldheim, Tina Greenawalt & Ryan Jolley	20
July 29, 2008	CRLF Surveys	AES: Tina Greenawalt, Charlotte Marks, David Sawyer, & Bruce Casler	40
July 28, 2008	CRLF Surveys	AES: Charlotte Marks, Jeb Bjerke, Kelly Buja & Bruce Casler	40
July 30, 2008	CRLF Surveys	AES: Charlotte Marks, Jeb Bjerke, Kelly Buja & Bruce Casler	20

Source: Winfield, 2005, 2006; AES, 2006-2008.

## 4.2.1 SETTING

### 4.2.1-1 REGIONAL SETTING

Napa County is located within the Inner North Coast Range Mountains, a geographic subdivision of the larger California Floristic Province (Hickman, 1993), which is strongly influenced by the Pacific Ocean. The region is in climate Zone 14 "Ocean Influenced Northern and Central California," characterized as an inland area with ocean or cold air influence. The climate of the region is characterized by hot, dry summers and cool, wet winters; average precipitation ranges from approximately 30 to 60 inches per year (U.S. Department of Agriculture, 1997). The average annual temperature for the region ranges from 45 to 90 degrees Fahrenheit. Napa County extends from an elevation of zero feet above sea level on the west side to approximately 4,200 feet above sea level on the east side. Because of its dramatic variation in climate and topographic diversity, Napa County has a high natural level of biodiversity compared to the rest of California.

Prominent geographic features in the vicinity of the project site include Napa Valley to the west of the project site, Lake Berryessa to the northeast, and the Vaca Mountains to the east (**Figure 3-1**). The Circle S Ranch encompasses a little less than half of Foss Valley (**Figure 3-2**). The watershed that contains the Circle S Ranch is drained by Milliken Creek, which is a tributary of the Napa River.

The dominant natural land cover types in the vicinity of the project site are oak woodland, grassland, chaparral/scrub and some riparian woodland. Agricultural cropland is also a dominant land cover in the area. Chaparral scrub dominates the higher elevation uplands and oak woodland and riparian woodland occurs in lower elevations and along major drainages. Chaparral/scrub is the second most common land cover type in Napa County at approximately 107,000 acres (21 percent of the land cover in Napa County). Oak woodland is the dominate land cover in Napa County occurring on over 167,000 acres (33 percent of


























the land cover in Napa County) and is characterized by several oak species, including coast live oak (*Quercus agrifolia*), interior live oak (*Quercus wislizenii*), and Valley oak (*Quercus lobata*). Chaparral/scrub is dominated by woody shrubs such as manzanita (*Arctostaphylos* spp.), chamise (*Adenostema fasciculatum*), *Ceanothus* spp., and coffeeberry (*Rhamnus* spp.), and contains less than ten percent cover of trees, including several different species of oak (*Quercus* spp.) (Napa County, 2005). Grassland is a relatively common land cover in the County, covering over 53,700 acres or nearly 11 percent of the County. The dominant grasses in Napa County include wild oat (*Avena*) species, brome (*Bromus*) grasses, wild barley (*Hordeum*) species, Italian ryegrass (*Lolium multiflorum*), medusa head (*Taeniantherum caput-medusae*) and annual fescue (*Vulpia*) species. Riparian woodland is less common in Napa County and covers only 11,000 acres (two percent of land cover in Napa County). Riparian woodland occurs along stream corridors and is dominated by several different species of conifers and broad-leaved trees depending on the specific microclimate where it occurs. Agricultural cropland in the vicinity is dominated by vineyards, which occupy over 40,000 acres in Napa County.

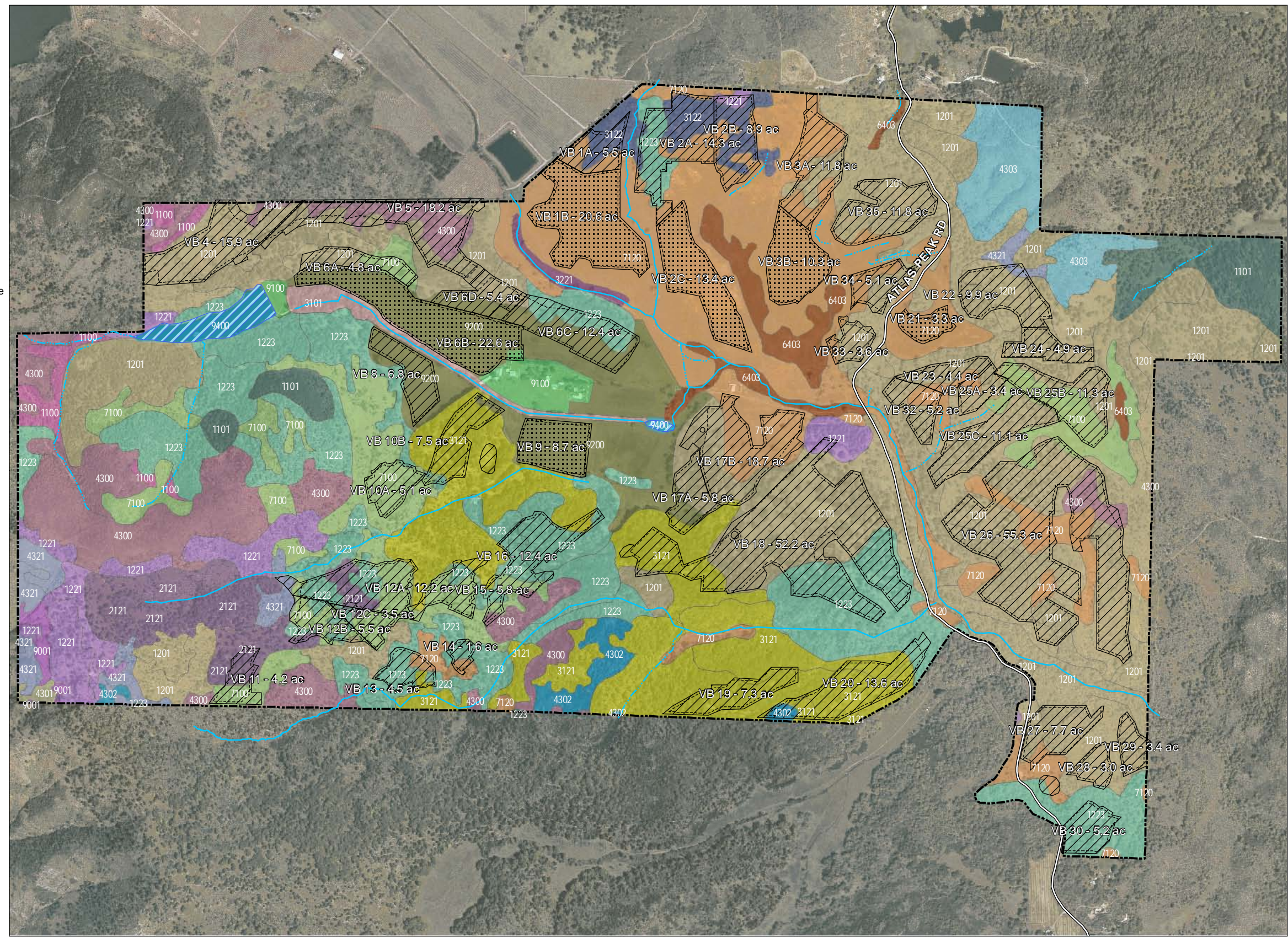
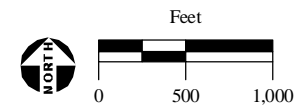
#### 4.2.1-2 PROJECT SITE

The site includes a portion of Foss Valley surrounded by relatively high hills; elevations on the project site range from approximately 1,340 feet (408 meters) above mean sea level (msl) in the northeast portion to roughly 2,627 feet (801 meters) above msl along the southern edge near Milliken Creek. Lower hills surround the valley floor to the north and south (**Figure 3-2**). The lowest part of the large valley floor occurs at approximately 1,420 feet above msl (433 meters) with isolated areas along the lower part of Milliken Creek, east of Atlas Peak Road, being as low as approximately 1,350 feet above msl (411 meters). Numerous drainages that flow from the hills to the lower valley floor contribute flow to Milliken Creek, which crosses the valley floor and flows south from the site.

The Circle S Ranch is contained within the Eastern Mountains Evaluation Area for Napa County as outlined in the NCBDR (Napa County, 2005). The 1,593-acre Circle S Ranch has 22 of the 59 biotic communities (the characteristic assemblage of plants and animals that are found in a given range of soil, climatological and topographic conditions across a region) mapped in Napa County on the land cover map created by the University of California at Davis's Information Center for the Environment (ICE) (Thorne et al. 2004) (**Figure 4.2-1** and **Table 4.2-2**). This vegetation classification was outlined in the Manual of California Vegetation (MCV) (Sawyer and Keeler-Wolf 1995) and the map was produced using a minimum mapping unit of 1 hectare (2.5 acres). The primary purpose of the MCV classification is to assist in the location and determination of significance and rarity of various vegetation types (biotic communities). This mapping was used as a guide and was revised as described in the notes below **Table 4.2-2** based on field surveys and ground-

**LEGEND**

-  Property Boundary
  -  Existing Reservoir
  -  USGS Streams
  -  Other Drainages
- Proposed Vineyard Blocks
-  Slopes Greater Than 5% and Included in ECPA
  -  Slopes Less Than 5% and Not Included in ECPA
  -  Vineyard Avenues
- Vegetation Alliances
-  6403 (Carex spp. - Juncus spp. - Wet Meadow Grasses) NFD Super Alliance
  -  9200 Agriculture
  -  3121 Black Oak Alliance
  -  3122 Blue Oak Alliance
  -  7120 California Annual Grasslands Alliance
  -  1101 California Bay - Madrone - Coast Live Oak - (Black Oak Big - Leaf Maple) NFD SuperAlliance
  -  4321 Chamise Alliance
  -  1201 Coast Live Oak - Blue Oak - (Foothill Pine) NFD Association
  -  1221 Coast Live Oak Alliance
  -  2121 Foothill Pine Alliance
  -  4303 Leather Oak - White Leaf Manzanita - Chamise Xeric Serpentine NFD Super Alliance
  -  4302 Mixed Manzanita - (Interior Live Oak - California Bay - Chamise) West County NFD Alliance
  -  1223 Mixed Oak Alliance
  -  3221 Mixed Willow Super Alliance
  -  9001 Rock Outcrop
  -  4300 Sclerophyllous Shrubland Formation
  -  4301 Scrub Interior Live Oak - Scrub Oak
  -  7100 Upland Annual Grasslands & Forbs Formation
  -  9100 Urban or Built-up
  -  3101 Valley Oak - (California Bay - Coast Live Oak - Walnut - Ash) Riparian Forest NFD Association
  -  9400 Water
  -  1100 Winter-Rain Sclerophyll Forests & Woodlands Formation



**Figure 4.2-1**  
Vegetation Alliances and Formations on the Circle S Ranch



**Table 4.2-2**  
BIOTIC COMMUNITIES, FORMATIONS AND ALLIANCES MAPPED ON THE CIRCLE S RANCH

<b>Vegetation Alliances</b>	<b>Napa County</b>		<b>Project Site</b>		<b>Proposed Blocks</b>		
	<b>Acreage</b>	<b>% Total</b>	<b>Acreage</b>	<b>% Napa County</b>	<b>Acreage</b>	<b>% Napa County</b>	<b>% Project Site</b>
(Carex spp. - Juncus spp - Wet Meadow Grasses) NFD Super Alliance	282.25	0.06%	24.71	8.75%	0.00	0.00%	0.00%
Agriculture	64,425.22	12.78%	89.66	0.14%	47.93	0.07%	53.46%
Black Oak Alliance	2,572.35	0.51%	141.27	5.49%	36.61	1.42%	25.91%
Blue Oak Alliance	44,105.68	8.75%	18.00	0.04%	12.84	0.03%	71.33%
California Annual Grasslands Alliance	39,175.33	7.77%	226.73	0.58%	93.23	0.24%	41.12%
Chamise Alliance	30,915.59	6.13%	18.95	0.06%	0.92	0.00%	4.85%
Coast Live Oak - Blue Oak - (Foothill Pine) NFD Association	26,375.30	5.23%	457.32	1.73%	187.76	0.71%	41.06%
Coast Live Oak Alliance	13,139.44	2.61%	39.59	0.30%	1.33	0.01%	3.36%
California Bay - Madrone - Coast Live Oak - (Black Oak Big - Leaf Maple) NFD Super Alliance	18,252.79	3.62%	35.13	0.19%	0.00	0.00%	0.00%
Foothill Pine Alliance	1,874.39	0.37%	41.65	2.22%	5.59	0.30%	13.42%
Leather Oak - White Leaf Manzanita - Chamise Xeric Serpentine NFD Super Alliance	26,987.10	5.35%	32.91	0.12%	0.00	0.00%	0.00%
Mixed Manzanita - (Interior Live Oak - California Bay - Chamise) West County NFD Alliance	8,608.98	1.71%	10.53	0.12%	0.88	0.01%	8.36%
Mixed Oak Alliance	28,704.01	5.69%	203.65	0.71%	50.13	0.17%	24.62%
Mixed Willow Super Alliance	542.10	0.11%	3.91	0.72%	0.00	0.00%	0.00%
Rock Outcrop	1,687.46	0.33%	3.62	0.21%	0.00 <sup>1</sup>	0.00%	0.00%
Sclerophyllous Shrubland Formation	3,277.24	0.65%	95.42	2.91%	13.85	0.42%	14.51%
Scrub Interior Live Oak - Scrub Oak - (California Bay - Flowering Ash - Birch Leaf Mountain Mahogany - Toyon - California Buckeye) Mesic East County NFD Super Alliance	11,037.84	2.19%	1.44	0.01%	0.00	0.00%	0.00%

<sup>1</sup> Discussed in Section 4.2.2-10.

Vegetation Alliances	Napa County		Project Site		Proposed Blocks		
	Acreage	% Total	Acreage	% Napa County	Acreage	% Napa County	% Project Site
Upland Annual Grasslands & Forbs Formation	12,153.07	2.41%	99.80	0.82%	35.51	0.29%	35.58%
Urban or Built-up	26,462.21	5.25%	12.71	0.05%	0.47	0.00%	3.70%
Valley Oak - (California Bay - Coast Live Oak - Walnut - Ash) Riparian Forest NFD Association	5,720.81	1.13%	10.84	0.19%	0.66	0.01%	6.09%
Water	28,805.00	5.71%	8.48	0.03%	0.00	0.00%	0.00%
Winter-Rain Sclerophyll Forests & Woodlands Formation	619.64	0.12%	10.94	1.77%	0.01	0.00%	0.09%
<b>Total</b>	<b>504,228.39<sup>2</sup></b>		<b>1,597.26</b>		<b>487.72</b>		

Notes: Acreages are approximate. Rather than lose vegetative resolution by mapping to the next coarsest level in the hierarchy mappers use ad hoc cover types of aggregated Alliances, here called Super Alliances. When new plot data collection is not an integral component of the mapping project, as was the case for this first edition of the Napa vegetation map, these provisional cover types are not formally defined by quantitative cover data. In the classification, these provisional types are preceded by NFD, for "not formally defined."

Parts or all of the Sensitive Biotic Communities found on serpentine substrates mapped on the Circle S Ranch appear to have been categorized incorrectly. Serpentine Grasslands NFD Alliance was mapped in and around proposed Blocks 25A and 25B in the ICE map. In a review of all available California Geological Survey (CGS) and USGS maps for the area of Blocks 25A and 25B, no serpentine substrate was found (personal communication between Napa County and M. Trso, consulting hydrogeologist, on July 28, 2008). Only volcanic (basaltic and andesitic) rocks and outcrops are present in that area. Trso also reviewed the latest USGS map for the Capell quadrangle, which maps those areas as flow, tuff and breccia rocks of the Sonoma Volcanics. It is suspected that the occasionally whitish pumiceous rocks were misinterpreted as serpentine/nite by the ICE vegetation mapping analysts. As a consequence, the area mapped by the ICE as Serpentine Grasslands NFD Alliance was changed to California Annual Grasslands Alliance above. This increases the total acreage of California Grasslands Alliance on site to 226.73 acres.

Only the Henneke Gravelly loam soil series mapped on the property represents soil weathered from serpentine rock. This soil type is mapped in the northeast corner of the site (see **Figure 4.4-1**). The Sensitive Biotic Community Leather Oak - White Leaf Manzanita - Chamise Xeric Serpentine NFD Super Alliance was mapped by the ICE in that area and overlaps partially with proposed Block 22 (approximately 0.34 acre). In a field visit to the site on July 24, 2008, with Landwatch, Inc. and Napa County personnel, AES botanist A. Edwards determined that the appropriate vegetation classification in the area is Chamise Alliance. Since the entirety of the mapped alliance on the project site was not examined, only the portion in the vicinity of the propose block that was groundtruthed was remapped as Chamise Alliance above.

Leather Oak - California Bay - Rhamnus spp. Mesic Serpentine NFD Alliance was mapped by the ICE in the western portion of the property on 2.71 acres. This vegetation alliance will not be impacted by the proposed project; however, no serpentine soils occur in the areas where it has been mapped. This area was remapped as California Bay - Madrone - Coast Live Oak - (Black Oak Big - Leaf Maple) NFD Super Alliance above. None of the non-serpentine chaparral biotic communities are considered sensitive.

Some areas mapped by the ICE and classified as "unknown" vegetation alliances were those for which Thorne et al. (2004) had insufficient data to define them. These areas have been groundtruthed (by AES, LandWatch and Napa County personnel) and reclassified above.

Source: Thorne et al. 2004; Napa County, 2008.

<sup>2</sup> Total includes all Vegetation Alliances for Napa County, including those not present on project site.

truthing. Based on this mapping, the project site contains approximately 335 acres of grassland, approximately 912 acres of woodland and approximately 113 acres of chaparral/shrubland habitats. Other biotic communities onsite include ruderal/developed, vineyard, and aquatic. Detailed descriptions of the biotic communities and wildlife within the holding are described in **Section 4.2.2** (Biotic Communities and Alliances) and **Section 4.2.3** (Wildlife) below.

In addition to the ICE map, AES biologists reviewed a map of the County's vernal pools, with a scale of approximately 400 feet per inch, and evaluated the vernal pools as well as rock outcrops within proposed vineyard blocks onsite (**Section 4.2.2**).

#### 4.2.1-3 SENSITIVE BIOTIC COMMUNITIES

Circle S Ranch contains five land cover types that could be considered potentially rare or "Sensitive Biotic Communities" (discussed below). The USFWS and National Marine Fisheries Service (NMFS) have jurisdiction over Sensitive Biotic Communities that are considered critical habitat for species listed as threatened or endangered by the Federal government. The CDFG considers sensitive biotic communities to be those which are listed in the CNDDDB (2005). Sensitive biotic communities are designated sensitive by CDFG, considered by local experts to be communities of limited distribution, and/or considered to be waters of the U.S. or the state (Napa County General Plan, 2008). They were identified in Napa County using a two-step process (Napa County, 2005):

1. An existing list of sensitive biotic communities prepared by the CDFG (2003) was first reviewed by senior Jones & Stokes biologists, and those communities that may occur in the County were identified. Because the community names in the CDFG list (2003) did not correspond directly with the names used in the Land Cover Layer, a determination was made as to which land cover types on the Land Cover Layer correspond to the communities on the CDFG list.
2. The aerial extent of each land cover type mapped in the County was generated from the land cover layer. Those biotic communities with an aerial extent of less than 500 acres in the County (approximately 0.1 percent of the County) were identified. These communities were discussed with local experts and their conservation importance established. Those that were not already on the original CDFG list and that were determined to be worthy of conservation were added to the list.

Other natural communities in the County that are considered sensitive due to the limited local distribution encompass less than 500 acres of cover within the County and are considered by local biological experts to be worthy of conservation (e.g., Wet Meadow Grasses Alliance; Napa County General Plan, 2008).

Potential Sensitive Biotic Communities (**Figure 4.2-2**) include three vegetation types: one wetland alliance and two upland habitats. Mixed Willow Riparian Super Alliance is the wetland alliance identified on Circle S Ranch and the two upland habitats that could be considered Sensitive Biotic Communities are California Annual Grassland Alliance and Upland Annual Grasses and Forbs Formation. The onsite grassland types are dominated by non-native grasses and forbs, with native species comprising sub-dominant to minor components; they do not contain sufficient densities of native vegetation to be considered conservation priorities based on plant composition alone. While there is no classification that identifies densities that would warrant protection, the non-native grasses and forbs represent more than 50 percent of the standing biomass (i.e. plant species).

Vernal pools are also considered sensitive by CDFG and Napa County. Rock outcrops are not treated as biotic communities, because species composition varies depending on the surrounding biological community; however, they are recognized as potentially significant because they provide important habitat features for special status plant and wildlife species, and must be assessed in the context in which they occur (NCBDR, 2005). Vineyard development has been known to significantly impact rock outcrop areas in relatively level terrain.

## 4.2.2 BIOTIC COMMUNITIES AND ALLIANCES

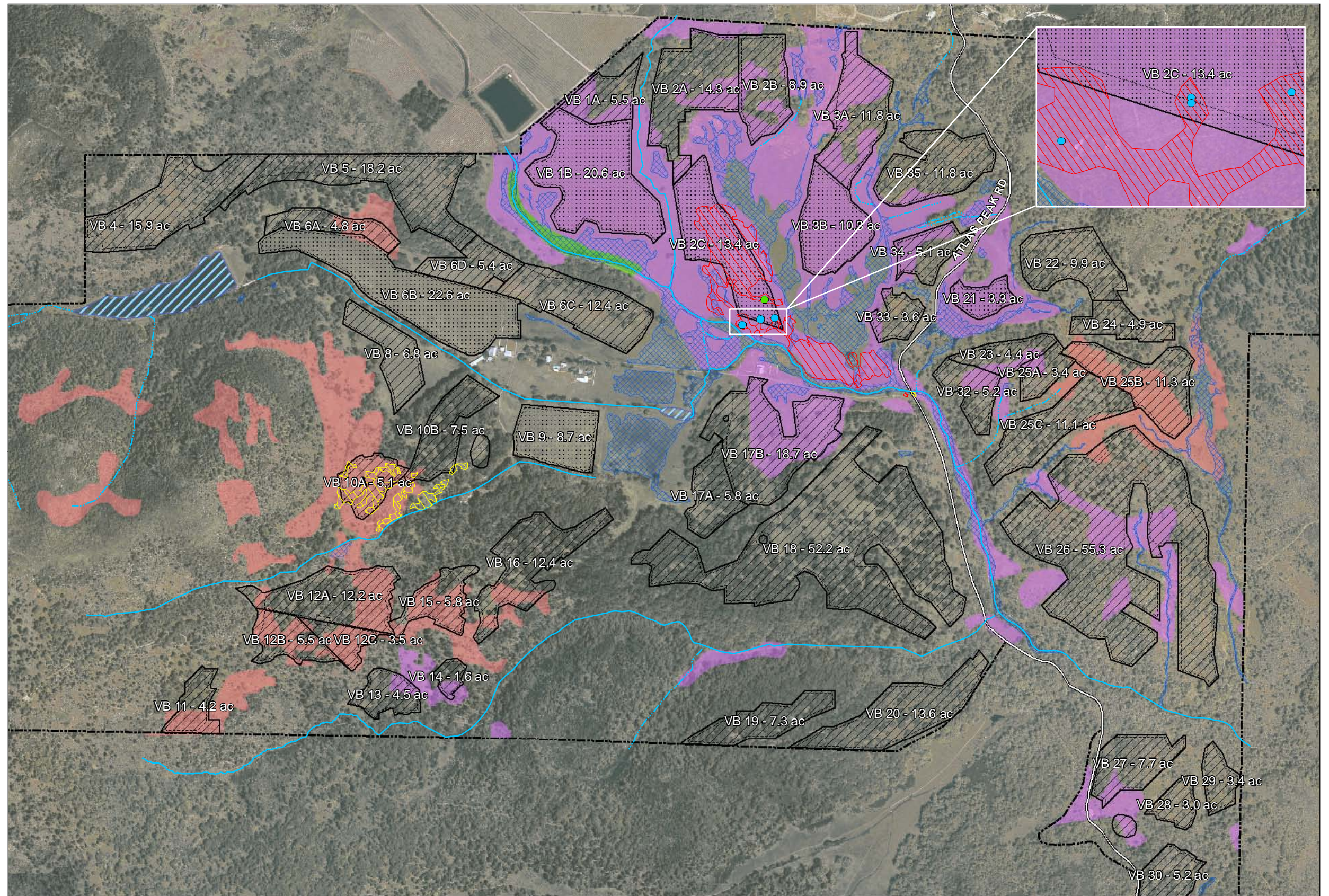
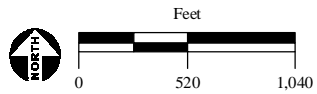
**Figure 4.2-1** shows the 22 vegetation types mapped within the project site. Photographs of each vegetation type are provided from the hydrologic study completed for the project (**Appendix H**) unless otherwise noted (**Figures 4.2-3 to 4.2-6**). A complete list of plant species observed on the property during the 2005 to 2008 site surveys and a complete list of animal species recorded is included in **Appendix D**; proposed vineyard blocks received the most scrutiny during the surveys, but the entire property was included in the surveys. **Table 4.2-2** reports the gross and percent acreage of each vegetation type in Napa County, on the Circle S Ranch, and summed across the proposed vineyard blocks (modified from Thorne et al. 2004). The biotic communities present on the Circle S Ranch are described briefly below (**Sections 4.2.2-1 through 4.2.2-12**).

### 4.2.2-1 AGRICULTURAL AND DEVELOPED AREAS

Agricultural, developed, urban or ruderal areas generally do not support native species or habitats of significance. These areas of the project site will not be discussed in detail in this section: see **Chapter 4.3** (Cultural Resources) for a more detailed discussion of the developed areas of the site. Typically, annual weeds and grasses that can withstand repeated disturbance inhabit ruderal/developed areas. The developed areas within the project site include buildings, cropland, unpaved roads and equipment storage/staging areas and do not include grazing lands or pastures (these are included as agricultural areas). No

**LEGEND**

- Vernal Pool
- Vernal Swale
- Approximate Foss Valley Rock Outcrop
- Approximate Fractured Rock Outcrop
- USGS Streams
- Other Drainages
- Existing Reservoir
- Wetlands
- Property Boundary
- Vineyard Avenues
- Proposed Vineyard Blocks
  - Slopes Greater Than 5% and Included in ECPA
  - Slopes Less Than 5% and Not Included in ECPA
- Potentially Sensitive Biotic Communities
  - California Annual Grasslands Alliance
  - Mixed Willow Super Alliance
  - Upland Annual Grasslands & Forbs Formation



**Figure 4.2-2**  
Potentially Sensitive Biotic Communities and Wetlands



NFD Super Alliance



Chamise Alliance (and Chamise Wedgeleaf Alliance)



California Annual Grassland Alliance



Leather Oak - California Bay



Upland Annual Grasslands and Forbs Formation



Leather Oak - White Leaf Manzanita



Blue Oak Alliance



Mixed Manzanita



Coast Live Oak - Blue Oak



Black Oak Alliance



Mixed Oak Alliance



Winter-Rain Sclerophyll Forests and Woodlands Formation



Scrub Interior Live Oak



Mixed Willow Alliance



Valley Oak





Seasonal Wetlands



Foothill Pine Alliance



Scelerophyllous Shrubland Formation



Rock Outcrops

species of concern were observed on any of the roads, agricultural or developed areas on the project site.

Approximately 27 acres (existing Blocks 6B and 9) on slopes less than five percent have been converted from agricultural use to vineyard. With the proposed project (including Blocks 6B and 9) approximately 48 acres (or 53 percent) of agricultural vegetation type would be converted to vineyard (**Table 4.2-2** and **Figure 4.2-1**). None of the built-up (developed/urban) areas on site, including houses and barns, would be disturbed.

#### 4.2.2-2 ANNUAL GRASSLAND AND NATIVE GRASS

There are two types of grassland on the Circle S Ranch: California Annual Grasslands Alliance and Upland Annual Grasslands and Forbs Formation. The total acreage of California Annual Grasslands Alliance and Upland Annual Grasslands in Napa County is approximately 51,328 acres (10.2 percent of the total land cover). California Annual Grasslands Alliance and Upland Annual Grasslands on the project site sum to approximately 326.5 acres (0.6 percent of the total in Napa County).

##### California Annual Grassland Alliance

This extensive series is composed of many alien and native annual species, which vary among stands (**Figures 4.2-1** and **4.2-3**). The most common grasses within the holding are nonnative: wild oat (*Avena* spp.), ripgut brome (*Bromus diandrus*), soft chess (*B. hordeaceus*), barley (*Hordeum murinum*), Mediterranean barley (*H. marinum* ssp. *gussoneanum*), rattlesnake grass (*Briza maxima*), little quaking grass (*B. minor*), dogtail grass (*Cynosurus echinatus*), cultivated timothy (*Phleum pretense*), annual hairgrass (*Deschampsia danthonioides*), hood canarygrass (*Phalaris paradoxa*), fescue (*Festuca arundinacea*), Medusa-head grass (*Taeniatherum caput-medusae*), and rattail fescue (*Vulpia myuros*). Some areas, especially on the Foss valley floor, were dominated by yellow star thistle (*Centaurea solstitialis*). Other common forbs included cut-leaf filaree (*Erodium cicutarium*), smooth cat's ear (*Hypochoeris glabra*), rough cat's ear (*Hypochoeris radicata*), bur-clover (*Medicago polymorpha*), Q tips (*Microuis californicus* var. *californicus*), English plantain (*Plantago lanceolata*), California poppy (*Eschscholzia californica*), shamrock (*Trifolium dubium*), and purple star-thistle (*C. calcitrapa*). See **Appendix D** for a complete listing of plant species identified within the holding.

There were no areas within the grasslands dominated by the native creeping wildrye (*Leymus triticoides*), purple needle grass (*Nasella pulchra*), or one-sided bluegrass (*Poa secunda* ssp. *secunda*), any of which would indicate significant persistent native grasslands. There were small patches of some native forbs scattered in the grasslands, including common, grazing-resistant plants like lupines (*Lupinus* spp.), castellejas (*Castelleja* spp.),

blue dicks (*Dichelostemma* spp.) and California poppies (*Eschscholzia californica*). These areas do not warrant further review as the densities of the species were not significant enough to consider them native areas.

California Annual Grasslands are mapped in 7.8 percent (39,175 acres) of Napa County. Approximately 0.6 percent (227 acres) of the County total for this alliance is found on the Circle S Ranch (**Table 4.2-2**). Approximately 41 percent (93 acres) of the 227 acres of California Annual Grassland on the project site would be developed into vineyard under the proposed project (**Figure 4.2-1**). None of these grasslands were dominated by native annual grasses and forbs; therefore, they are not considered Sensitive Biotic Communities based on plant species dominance (while there is no classification that identifies densities that would warrant protection, the non-native grasses and forbs represent more than 50 percent of the standing biomass). However, they provide forage, wildlife movement and nesting habitat for invertebrates, birds and mammals, and appropriate vegetative structure for many native plant species. These areas could be improved for native species by encouraging native plant species growth and controlling exotic invasive species such as star thistle and medusa-head grass (see **Impact and Mitigation Measure 4.2-1**).

#### Upland Annual Grasses and Forbs Formation

This alliance is similar to California Annual Grasslands but contains more non-native forbs in addition to dominant non-native grasses (**Figures 4.2-1 and 4.2-3**). Grasses included wild oat, ripgut brome, soft chess, Mediterranean barley, barley, rattlesnake grass, little quaking grass, dogtail grass, bulbous bluegrass (*Poa bulbosa*), blue dicks, purple sanicle (*Sanicula bipinnatifida*), Q tips, plantain, vetch (*Vicia cracca*), shamrock, red clover (*Trifolium pratense*), bird's foot trefoil (*Lotus corniculatus*), Spanish clover (*L. purshianus* var. *purshianus*), miniature lupine (*Lupinus bicolor*), Lemark's bedstraw (*Galium divaricatum*), bedstraw (*G. aparine*), graceful bedstraw (*Galium porrigens* var. *tenuis*), wood fern (*Dryopteris arguta*), violet (*Viola lobata* ssp. *integrifolia*), bracken fern (*Pteridium aquilinum*), bitter-cress (*Cardamine* spp.), common linanthus, white brodiaea, Italian thistle (*Carduus pycnocephalus*), yarrow (*Achillea millefolium*), annual hairgrass, soap plant (*Chlorogalum pomeridianum*), and monkey flower (*Mimulus aurantiacus*).

Approximately 12,153 acres (2.4 percent of the total area) of Upland Annual Grasslands and Forbs are mapped in Napa County. The Circle S Ranch contains approximately 100 acres of this grassland alliance (0.82 percent of the total in Napa County) (**Table 4.2-2 and Figure 4.2-3**). Because none of the areas mapped as Upland Annual Grasslands and Forbs are dominated by native plant taxa, these areas are not considered Sensitive Biotic Communities. However, they provide forage and nesting habitat for invertebrates, birds and mammals, and appropriate vegetative structure for many native plant species. These areas could be improved for native species by encouraging native plant species growth and

controlling exotic invasive species such as star thistle and medusa-head grass (see **Impact and Mitigation Measure 4.2-1**).

#### 4.2.2-3 FRESHWATER AND SEASONAL WETLANDS

##### **(*Carex* spp. - *Juncus* spp - Wet Meadow Grasses) NFD Super Alliance**

This alliance is not well characterized as a vegetation alliance but is known to be associated with grasslands where soils are saturated for much of the wet season (**Figure 4.2-1**). These seasonal wetlands contain many of the species associated with vernal pools and seeps on the project site (see **Section 4.2.2-8**). A total of approximately 282 acres (0.06 percent of the total land cover in Napa County) occur in Napa County. Approximately 25 acres of this vegetation alliance are found on the project site (8.75 percent of the total found in Napa County). None of this alliance would be developed under the proposed project, and undeveloped upland grassland would provide a minimum 50-foot buffer to these areas; the justification for buffer widths is discussed in **Impacts 4.2-4** and **4.2-5**.

##### **Northern Vernal Pool**

Northern Vernal Pools are considered sensitive habitats by CDFG and Napa County, but are often too small to be mapped by the ICE, which is why they do not appear in **Table 4.2-2**. AES biologists mapped four vernal pools and a vernal swale within the southern end of proposed Block 2C (**Figure 4.2-2**, discussed in **Impact and Mitigation Measure 4.2-6**). This vineyard block is mapped as California Annual Grassland, but also contains a significant rock outcrop (see **Section 4.2.2-10**).

Seasonal wetlands, including vernal pools (discussed below), on the project site are dominated by smooth goldfields (*Lasthenia glaberima*), popcorn flower (*Plagiobothrys stipitatus* ssp. *macranthus*), spikerush (*Eleocharis macrostachya*), Baltic rush (*Juncus balticus*), cow clover (*Trifolium wormskioldii*), California semaphore grass (*Pleuropogon californicus*) and monkey flower (*Mimulus guttatus*) (Winfield 2006). Water starwort (*Callitriche heterophylla*, *C. longipedunculata*) is also locally dominant. At the upland boundary of the seasonal wetlands, several species of clover (*Trifolium depauperatum* ssp. *amplectens*, *T. subterraneum*) are dominant along with California sunflower (*Helianthella californica*), cream sacs (*Castilleja rubicundula* ssp. *lithospermoides*), buttercup (*Ranunculus californicus*) and goldfields (*Lasthenia californica*).

#### 4.2.2-4 CHAPARRAL

This vegetation type is dominated by woody shrubs, with less than ten percent cover of trees, and it generally occurs in settings that are too hot, dry, rocky, and steep to support

tree-dominated habitats (Holland, 1986). It tends to be found on south and southwest-facing slopes. Chaparral/scrub covers approximately 38,053 acres (7.55 percent of the total land cover) of Napa County. Out of approximately 16 acres on the Circle S Ranch, 0.46 acre (2.9 percent of the site) is proposed for development.

Six types of chaparral were mapped by the ICE on the project site, the last one is considered a Sensitive Biotic Communities that occurs on serpentinite soils but it would not be impacted by the proposed project: Chamise Alliance; Mixed Manzanita - (Interior Live Oak - California Bay - Chamise) West County NFD Alliance; Scrub Interior Live Oak - Scrub Oak - (California Bay - Flowering Ash - Birch Leaf Mountain Mahogany - Toyon - California Buckeye) Mesic East County NFD Super Alliance; Sclerophyllous Shrubland Formation; California Bay - Madrone - Coast Live Oak - (Black Oak Big - Leaf Maple) NFD Super Alliance; and Leather Oak - White Leaf Manzanita - Chamise Xeric Serpentine NFD Super Alliance.

## NON-SERPENTINE CHAPARRAL

### Chamise Alliance

The Chamise Alliance is dominated by chamise (*Adenostoma fasciculatum*) with few other woody species and little herbaceous understory, depending on canopy cover (**Figures 4.2-1 and 4.2-3**). This vegetation type in Napa County covers approximately 30,916 acres, or roughly six percent of the total vegetative cover in the County. Approximately 0.9 acre (4.9 percent) of the almost 19 acres of this alliance on the project site would be developed into vineyard (**Table 4.2-2**).

### Mixed Manzanita - (Interior Live Oak - California Bay - Chamise) West County NFD Alliance

The dominant shrub species that characterize this alliance on the project site are a mixture of interior live oak (*Q. wislizeni*), California bay (*Umbellularia californica*), manzanita (*Arctostaphylos manzanita*), ceanothus (*Ceanothus* spp.), chaparral pea (*Pickeringia montata*), and dwarf coast live oak (*Q. agrifolia*). The dominant grasses and forbs are wild oat, ripgut brome, soft chess, Mediterranean barley, barley, rattlesnake grass, little quaking grass, dogtail grass, blue dicks, purple sanicle, Q tips, plantain, vetch, shamrock and red clover.

The project site contains approximately 10.5 acres of dense Mixed Manzanita Alliance (**Figures 4.2-1 and 4.2-4**). Napa County contains approximately 8,609 acres (1.7 percent) of this alliance (**Table 4.2-2**). Approximately 0.9 acres (8.4 percent) of the 10.5 acres would be converted to vineyard.

**Scrub Interior Live Oak - Scrub Oak - (California Bay - Flowering Ash - Birch Leaf Mountain Mahogany - Toyon - California Buckeye) Mesic East County NFD Super Alliance**

This alliance is dominated by interior live oak, with blue oak, buckeye (*Aesculus californica*) and California bay (**Figures 4.2-1** and **4.2-5**). Dense canopy and persistent leaf litter restrict the understory herbaceous layer. There are approximately 1.4 acres of this vegetation alliance on the project site, 0.01 percent of the acreage of this type found in Napa County. No vineyard development would occur on this vegetation type (**Table 4.2-2**).

**Sclerophyllous Shrubland Formation**

An estimated 3,277 acres (0.65 percent of the total land cover) of Napa County is classified as Sclerophyllous Shrubland Formation, defined as "...disturbed settings and post fire stands, generally less than 15 years old" (**Appendix D** and **Figures 4.2-1** and **4.2-6**). Thorne et al. (2004) designate a portion of proposed Blocks 4 and 5 as this vegetation type. The vegetation in these two proposed vineyard blocks is a mixture of Coast Live Oak-Blue Oak Alliance and Upland Grassland and Forbs Alliance with scattered shrubs, including poison oak (*Toxicodendron diversilobum*), coyote bush (*Baccharis pilularis*) and dwarf coast live oak (*Quercus agrifolia* var. *frutescens*). Almost 14 of the 95 acres on site would be converted to vineyard (14.5 percent) (**Table 4.2-2**). This is not considered a sensitive biological community.

**California Bay - Madrone - Coast Live Oak - (Black Oak Big - Leaf Maple) NFD Super Alliance**

There are approximately 35.1 acres of this vegetation alliance on the project site (**Figure 4.2-1**), 0.19 percent of the acreage of this type found in Napa County. This super alliance is dominated by California bay with madrone and coast live oak as common associates, and black oak occasional in the canopy. No vineyard development would occur on this vegetation type (**Table 4.2-2**).

**MIXED SERPENTINE CHAPARRAL****Leather Oak - White Leaf Manzanita - Chamise Xeric Serpentine NFD Super Alliance**

The Leather Oak - White Leaf Manzanita - Chamise Xeric Serpentine NFD Super Alliance was mapped on 26,987 acres (5.35 percent) of Napa County. Approximately 33 acres were mapped on the Circle S Ranch (**Table 4.2-2**, **Figures 4.2-1** and **4.2-4**). Vegetation alliances of mixed chaparral that occur on serpentinite soils are considered Sensitive Biotic

Communities by CDFG and Napa County. None of the proposed vineyard blocks contain this sensitive alliance, and it shall remain undisturbed.

#### 4.2.2-5 DECIDUOUS OAK WOODLAND

Two types of oak woodland alliances are mapped on the project site: Black Oak Alliance and Blue Oak Alliance.

##### **Black Oak Alliance**

The dominant canopy species is black oak (*Quercus kelloggii*) with understory components including wild oat, ripgut brome, soft chess, Mediterranean barley, barley, rattlesnake grass, little quaking grass, dogtail grass, blue dicks, purple sanicle, Q tips, plantain, vetch, shamrock and red clover (**Figures 4.2-1 and 4.2-4**). This vegetation alliance covers 2,572 acres (0.5 percent) of Napa County (**Table 4.2-2**). Approximately 141 acres occur on the Circle S Ranch, 5.5 percent of the total amount found in Napa County. Thirty-seven of the 141 acres (25.9 percent) would be converted to vineyard discussed in **Impact and Mitigation Measure 4.2-19**.

##### **Blue Oak Alliance**

The dominant canopy species is blue oak (*Quercus douglasii*) at 80 to 100 percent canopy cover, with interior live oak (*Quercus wislizenii*) as a common associate (**Figures 4.2-1 and 4.2-4**). The dominant understory species include wild oat, ripgut brome, soft chess, Mediterranean barley, barley, rattlesnake grass, little quaking grass, dogtail grass, blue dicks, purple sanicle, Q tips, plantain, vetch, shamrock and red clover. Blue Oak Alliance is more abundant in Napa County relative to Black Oak Alliance, covering 44,106 acres or 8.8 percent of the County total (**Table 4.2-2**). However, Black Oak Alliance is approximately seven times more abundant on the Circle S Ranch than Blue Oak Alliance. There are 18.0 acres of Blue Oak Alliance mapped on the project site and approximately 13 acres (71.3 percent) would be converted to vineyard under the proposed project (discussed in **Impact and Mitigation Measure 4.2-19**).

#### 4.2.2-6 EVERGREEN OAK WOODLAND

##### **Coast Live Oak Alliance**

Coast Live Oak Alliance is mapped in several places on the project site, but primarily in the southwestern portion (**Figure 4.2-1**). Coast Live Oak Alliance is the only or dominant (greater than about 75 percent) canopy species with some blue oak California bay and madrone present. Slopes are often steep. There are approximately 39.6 acres of this

association on the Circle S Ranch and approximately 1.3 of those acres (3.7 percent) would be converted to vineyard (**Table 4.2-2**) (discussed in **Impact** and **Mitigation Measure 4.2-19**). This oak woodland type is less common in the project area and in Napa County (13,139 acres or 2.6 percent of the total land cover) than the Coast Live Oak - Blue Oak - (Foothill Pine) NFD Association below.

#### 4.2.2-7 EVERGREEN AND DECIDUOUS OAK WOODLAND

##### Coast Live Oak - Blue Oak - (Foothill Pine) NFD Association

The canopy is dominated by coast live oak with secondary associates of valley oak, blue oak, Pacific madrone (*Arbutus menziesii*), California bay and scattered foothill/gray pine (*Pinus sabiniana*) at some locations (**Figures 4.2-1** and **4.2-4**). The understory is composed of wild oat, ripgut brome, soft chess, Mediterranean barley, barley, rattlesnake grass, little quaking grass, dogtail grass, blue dicks, purple sanicle, Q tips, plantain, vetch, shamrock and red clover. There are approximately 457 acres of this association on the Circle S Ranch and approximately 188 of those acres (41.1 percent) would be converted to vineyard (**Table 4.2-2**) (discussed in **Impact** and **Mitigation Measure 4.2-19**). This oak woodland type is relatively abundant on the project area and in Napa County (26,375 acres or 5.2 percent of the total land cover).

##### Mixed Oak Alliance

This alliance is dominated by coast live oak and valley oak (*Quercus lobata*), with other canopy species including Pacific madrone, black oak and blue oak (**Figures 4.2-1** and **4.2-5**). The dominant understory was wild oat, ripgut brome, soft chess, Mediterranean barley, barley, rattlesnake grass, little quaking grass, dogtail grass, bulbous bluegrass (*Poa bulbosa*), rattail fescue (*Vulpia myuros*), blue dicks (*Dichelostemma congestum*), purple sanicle, Q tips, plantain, vetch, shamrock, red clover, bird's foot trefoil (*Lotus corniculatus*), Spanish clover (*Lotus purshianus* var. *purshianus*), miniature lupine (*Lupinus bicolor*), Lemark's bedstraw (*Galium divaricatum*), bedstraw (*Galium aparine*), graceful bedstraw (*Galium porrigens* var. *tenuis*), wood fern (*Dryopteris arguta*), violet (*Viola lobata* var. *integrifolia*), bracken fern (*Pteridium aquilinum* var. *pubescens*), bitter cress (*Cardamine* sp.), common linanthus (*Linanthus parviflorus*), white brodiaea (*Triteleia hyacinthine*), Italian thistle (*Carduus pycnocephalus*), coastal yarrow (*Achillea millefolium*), annual hairgrass (*Aira caryophyllea*), soap plant (*Chlorogalum pomeridianum*), monkey flower (*Mimulus aurantiacus*). There are about 204 acres of Mixed Oak Alliance on the Circle S Ranch, of which 50 acres (25 percent) would be converted to vineyard (**Table 4.2-2**) (discussed in **Impact** and **Mitigation Measure 4.2-19**). The 204 acres of this alliance represents approximately 5.7 percent of the 28,704 acres in Napa County.



#### 4.2.2-8 RIPARIAN WOODLAND

##### Mixed Willow Super Alliance

The Mixed Willow Super Alliance is considered a “sensitive biotic community” by Napa County, and it is the single willow vegetation alliance on the project site. Mixed willow forests typically occur in narrow bands along streams although the majority of mapped stands are in the vicinity of small lakes and reservoirs. In Napa County, the Napa Valley floor and Pope Valley were mapped as containing the largest fraction of mixed willow forests. Mixed willow riparian woodlands and scrub includes Pacific willow (*Salix lucida* ssp. *lasiandra*), red willow (*Salix laevigata*), black willow (*Salix gooddingi*), sandbar willow (*Salix interior*), and arroyo willow (*Salix lasiolepis*) in pure stands or in mixed stands. The Mixed Willow Super Alliance is mapped on 542 acres (0.1 percent) within Napa County (Table 4.2-2).

The 3.91-acre area mapped as Mixed Willow Riparian Super Alliance on the Circle S Ranch is along a drainage and is dominated by yellow willow (*S. lutea*) and *Rubus discolor* (Himalayan blackberry)(Figures 4.2-1 and 4.2-5). It borders Milliken Creek along the southwest side of proposed Block 1B. Proposed Block 1B consists of California Annual Grassland on a slope of less than five percent with a 100-foot grassland buffer between the proposed vineyard and the riparian corridor. None of the approximately four acres of this alliance mapped on the Circle S Ranch is proposed for development.

##### Valley Oak - (California Bay - Coast Live Oak - Walnut - Ash) Riparian Forest NFD Association

Dominated by valley oak, this area near the dam overflow channel has been heavily grazed (Figures 4.2-1 and 4.2-5). Black oak, blue oak, box elder (*Acer negundo*), California sycamore (*Platanus racemosa*), poplar (*Populus fremontii*), ash (*Fraxinus latifolia*), California walnut (*Juglans hindsii*) and coast live oak trees may also be interspersed in this association. It has an understory of grassland and shrub species typical in riparian areas, including common graminoids (sedges like *Carex barbarae*, ryegrass (*Leymus triticoides*), wild oats and ripgut brome) and forbs (prickly wild lettuce (*Lactuca serriola*) and soap plant). Shrubs that may be present include coyote brush (*Baccharis pilularis*), western spice bush (*Calycanthus occidentalis*), toyon (*Heteromeles arbutifolia*) and California rose (*Rosa californica*). Approximately 0.66 of the 10.84 acres on the project site would be converted to vineyard (6 percent) (Table 4.2-2) (discussed in Impact and Mitigation Measure 4.2-19). The Circle S Ranch has only 0.19 percent of the total acreage of this vegetation type in Napa County.

#### 4.2.2-9 PINE FOREST

##### **Foothill Pine Alliance**

The Foothill Pine Alliance was the single pine vegetation alliance observed on the project site. Dominated by foothill/gray pine, the canopy represents an open woodland structure with herbaceous species typical of the project area (**Figures 4.2-1** and **4.2-6**). It intergrades with Blue and Black Oak Woodland Alliances. Other woody species present included California bay, buckbrush (*Ceanothus cuneatus* var. *cuneatus*), coast live oak, blue oak, black oak, valley oak, and interior live oak. Approximately 5.6 of the 41.7 acres of Foothill Pine Alliance on the project site (13.4 percent) would be converted to vineyard (**Table 4.2-2**). The 41.7 acres represents approximately 2.2 percent of 1,874 acres (0.37%) of this alliance found in Napa County.

#### 4.2.2-10 ROCK OUTCROP

Rock outcrops are mapped where herbaceous or woody vegetation generally is less than five to ten percent absolute cover, but most outcrops in Napa County were generally below the minimum map unit of 2.5 acres used in the NCBDR by the ICE (see **Section 4.2.1-2**). None of the steep hillside rock outcrops on the project site would be converted to vineyard. However, two different types of rock outcrop occur within proposed development areas. Valley floor habitat in and around Block 2C contains approximately 15 acres of flat volcanic outcrops (**Figures 4.2-2** and **4.2-6**) embedded in California Annual Grasslands Alliance. Portions of Blocks 10A and 10B contain a more fractured volcanic outcrop covering approximately four to five acres. The acreage estimate is less precise in this situation because it is difficult to determine the precise boundary of the outcrop because it is so fractured. The more open areas of this habitat may be classified as Upland Annual Grasslands and Forbs, but parts contain sparse canopy of non-serpentine chaparral shrubs and oaks. Because they provide relatively harsh growing conditions (i.e., greater nutrient and moisture stress), rock outcrops often harbor higher percentages of native plant species than non-outcrop areas, albeit in sparse overall vegetative cover (discussed in **Impact and Mitigation Measure 4.2-4**).

#### 4.2.2-11 OTHER

##### **Winter-Rain Sclerophyll Forests & Woodlands Formation**

This vegetation type is primarily composed of California bay, oak and (according to Ayres Associates) eucalyptus (a non-native tree) (**Figures 4.2-1** and **4.2-5**), and occurs on an estimated 620 acres (0.12 percent) of Napa County. Approximately 1.8 percent (11 acres) of this vegetation type in Napa County occurs on the Circle S Ranch, and it would remain

largely undisturbed under the proposed project (**Table 4.2-2**). One tenth of an acre of this vegetation type (0.09 percent of the total on the Circle S Ranch) is proposed for conversion to vineyard in Block 4. This formation is not considered a sensitive vegetation type or oak woodland.

#### 4.2.2-12 DRAINAGES, STREAMS AND RESERVOIRS

Winfield & Associates prepared a delineation of waters of the U.S. for the Circle S Ranch project site in July 2005 (File Number 29745N; **Appendix E**; Winfield, 2005) (**Figure 4.2-2**). Milliken Creek is the major drainage through the Foss Valley floor, originating at the northern end of the valley and running south, then east and south again once it crosses beneath Atlas Peak Road, following the road for some distance before exiting the project site. The drainages on the valley side of the hills all contribute flow to Milliken Creek. In some areas, the bedrock is shallow “forcing” the subsurface water flow to the surface, resulting in local ponding and flow in swales. There are four vernal pools located in the valley (**Figure 4.2-2**).

The jurisdictional features are located along the valley floor (**Figure 4.2-2**), consisting of drainages (tributary waters of the U.S.), seeps, seasonal wetlands and vernal pools. The vegetative structure of the seeps, seasonal wetlands and vernal pools were similar throughout the site (referred to collectively as “seasonal wetlands” for vegetative descriptions and boundaries in Winfield, 2005). Milliken Creek is included as part of the seasonal wetland surrounding the creek. Tributary waters of the U.S. are those drainages without hydrophytic vegetation.

#### Seasonal Wetlands

Approximately 62 acres of seasonal wetlands occur on the project site, mostly on the valley floor (**Figure 4.2-2**). The valley floor wetlands include Carex spp. - Juncus spp. - Wet Meadow Grasses) NFD Super Alliance and Northern Vernal Pools and swales. These areas were dominated by smooth goldfields (*Lasthenia glaberima*), popcorn flower (*Plagiobothrys stipitatus macranthus*), spikerush (*Eleocharis macrostachya*), Baltic rush (*Juncus balticus*), cow clover (*Trifolium wormskioldii*), California semaphore grass (*Pleuropogon californicus*) and monkey flower (*Mimulus guttatus*). Water starwort *Callitriche heterophylla*, *C. longipedunculata*) was also locally dominant. At the upland boundary of the seasonal wetlands, several species of clover (*Trifolium depauperatum amplexens*, *T. subterraneum*) were dominant along with California sunflower (*Helianthella californica*), cream sacs (*Castilleja rubicundula lithospermoides*), buttercup (*Ranunculus californicus*) and goldfields (*Lasthenia californica*).

### Tributary Waters of the United States

Approximately 4.8 acres of tributary waters of the U.S. occur on the Circle S Ranch (**Figure 4.2-2**). These waters are scattered across the hills surrounding the low areas of the project site and contribute to the hydrology of the valley floor. These waters are seasonal and do not contain surface flow during the summer and early fall. The substrate of these waters consists of cobble and gravel and supports plants characteristic of the surrounding upland areas.

Almost all of the proposed vineyard blocks are adjacent to wetlands, County designated streams or non-County designated streams on the project site. Corridors for County designated streams have been preserved throughout the project site and minimum stream setbacks that range in width from 20 to 50 feet on either side of streams, measured from top of bank, and minimum wetland setbacks of 50 feet have been maintained (discussed in **Impact and Mitigation Measures 4.2-5 and 4.2-6**, and discussed further in relation to wildlife corridors in **Mitigation Measure 4.2-7 and Figure 4.2-8**).

#### 4.2.2-13 WILDLIFE MOVEMENT

The Circle S Ranch has been in continuous agricultural use for 120 years in grazing, hay production, cordwood production orchards and vineyards (ESA, 2006). The most intense use has occurred in the valley floor. Fencing for cattle was the major impediment to wildlife movement during that time; currently existing deer fencing is located along the northern property boundary. A variety of wildlife use existing onsite corridors; wildlife observed on the property that may use the corridors include coyote, bobcat, fox, mule deer, western pond turtle and jackrabbits (a complete list of animals observed onsite is in **Appendix D**).

Wildlife movement areas interspersed with developed areas are important to increase plant and animal movement, increase genetic variation and reduce population fluctuations (Tewksbury et al., 2002). Wide riparian corridors, naturally used as movement corridors by wildlife in general, provide for a greater diversity and number of mammalian predators as well as habitat and cover for various wildlife species (Hilty and Merenlender, 2002). Wildlife corridors have been demonstrated to not only increase the exchange of animals between patches, but also facilitate two key plant-animal interactions: pollination and seed dispersal (Tewksbury et al., 2002). The beneficial effects of wildlife corridors extend beyond the area they add, and suggest that increased plant and animal movement through corridors have positive impacts on plant populations and community interactions in fragmented landscapes. Wildlife corridors in riparian areas facilitate wildlife movement and preserve watershed connectivity simultaneously.

Corridor users can be grouped into two general types: passage species and corridor dwellers. Passage species include large herbivores and medium to large carnivores that need corridors to allow individuals to pass directly between two areas in discrete events of brief duration (e.g., mule deer, turkey, striped skunk, coyote, bobcat, mountain lion and black bear). For these species, corridors facilitate juvenile dispersal, seasonal migration and home range connectivity. Corridor dwellers include species with limited dispersal ability that take several days to several generations to pass through a corridor. These species must be able to live in the corridor for extended periods. Therefore, the corridor must provide most or all of the species' life-history requirements. Corridor dwellers include most plants, and some reptiles, amphibians, insects, small mammals, and birds with limited dispersal ability.

It is important to have patches connected by "high-quality" habitat that provides for both species survival and reproduction. Henein and Merriam (1990) observed that for two isolated patches, increasing the number of high quality corridors increased metapopulation size (collections of populations), while adding low-quality habitat corridors actually decreased metapopulation size. They also observed that the addition to a metapopulation of a patch connected by a low quality corridor had a negative effect on the metapopulation size, indicating increased mortality during movement. It is also important to align corridors with other habitats that are suitable to the target species.

Corridors may have an optimum width determined by edge effect and the tendency of dispersing animals to wander.. Minimum widths of corridors may be estimated from data on target species home range sizes and shapes as well as considering widths necessary to maintain desired habitat against penetration of other vegetation types from edges (e.g., invasive weeds; Harrison, 1992).

Very few data exist on home ranges of wildlife, but there are data for a few species in central California that can be used to determine the minimum corridor widths on the Circle S Ranch. The home ranges of coyotes and bobcats have been estimated as exceeding 125 hectares (618 acres), so any length corridor on the site would be sufficiently short for passage (Tigas. 2002). However, corridors that are too narrow may cause "meso-predator" release, where the loss of larger predators leads to an outbreak of smaller and often non-native predators that can lead to heavy predation on native birds and rodents.

Recent data from riparian corridors in vineyards in Sonoma County indicate that large native predators are more likely to use wide riparian corridors (greater than 98 feet or 30 meters on each side of the creek), and smaller native and non-native mammalian predators, especially the domestic cat, are more active in narrow (33 to 98 feet, or 10 to 30 meters on each side of the creek) riparian corridors and denuded riparian corridors (Hilty and Merenlender, 2002). Data on terrestrial nesting habitat use by Pacific pond turtles (*Clemmys marmorata*) averaged 28 meters (92 feet) on either side of creeks (Rathbun et al., 2002). In sum, data on large predators, medium-sized predators and pond turtles in central California suggest

that corridor widths should be at least 100 feet wide to provide adequate movement areas for some of the passage species and corridor dwellers present in the landscape. Wildlife corridors are discussed further in **Impact** and **Mitigation Measure 4.2-7**.

### 4.2.3 WILDLIFE

Calls, scat, remains, skulls or direct sight were used to identify wildlife during the site surveys. Some of the mammal predators included: bobcat (*Lynx rufus*), coyote (*Canis latrans*) and fox (*Vulpes vulpes*). Some of the herbivores seen were jackrabbit (*Lepus californicus*), mule deer (*Odocoileus hemionus*), California ground squirrel (*Spermophilus beecheyi*) and Botta's pocket gopher (*Thomomys bottae*). Sixty-three species of birds have been noted, including Cooper's hawk (*Accipiter cooperii*; formerly a California Species of Concern) and olive-sided flycatcher (*Contopus cooperi*; a California Species of Concern). Three olive-sided flycatchers were observed near the existing reservoir and south of the southern boundary of Vineyard Block 6B. A wildlife den in use by a female fox (*Vulpes vulpes*) and her pups was observed by Winfield & Associates in a burn cavity at the base of a tree (location unknown). There are many damaged trees distributed throughout the property that provide cavities for wildlife use (Nix, 2007). No raptor nests were observed during the surveys. While no nests were observed, vegetation on the site represents potential nesting habitat for migratory bird species and raptors (discussed in **Impact** and **Mitigation Measure 4.2-14**). Well-established populations of western pond turtle (*Emmys marmorata*; a California Species of Concern) are concentrated around the reservoir in the northwest portion of the site, the pond east of the ranch buildings, and in five locations along Milliken Creek (see **Figure 4.2-9** for approximate habitat area supporting the western pond turtle). This California Species of Concern is discussed in greater detail below and in **Impact** and **Mitigation Measure 4.2-13**. For a complete list of animal species observed onsite, see **Appendix D**.

### 4.2.4 SPECIAL STATUS SPECIES

Information on biological resources in the vicinity of the project site was obtained from the following sources:

- USFWS list, dated January 31, 2008, of federal listed special status species with the potential to occur within the Napa County and within the “Yountville, California” and “Capell Valley, California” 7.5-minute quadrangles (quad) (USFWS, 2008).
- California Natural Diversity Database (CNDDDB) query, updated August 2, 2008, of special status species known to occur within the “Yountville, California” and “Capell Valley, California” quads (CDFG, 2003).
- CNPS list, dated July 9, 2008, of special status plants within the “Yountville, California” and “Capell Valley quads (CDFG, 2003).
- Special status species occurrences within 5 miles of the project site (CDFG, 2003) (**Figure 4.2-7**).
- Napa County Baseline Data Report (NCBDR) (2005).
- Aerial photographs and topographic maps of the project site.
- Biological field surveys within the project site.


Special status species are those considered to be of management concern to state and/or federal resource agencies, including species:

- Listed as endangered, threatened or candidate for listing under the Federal Endangered Species Act.
- Listed as endangered, threatened, rare or proposed for listing under the California Endangered Species Act of 1970.
- Designated as endangered or rare, pursuant to California Fish and Game Code (§ 1901).
- Designated as fully protected, pursuant to California Fish and Game Code (§§ 3511, 4700 or 5050).
- Designated as species of special concern by the CDFG.
- Meeting the definitions of rare or endangered under CEQA, including plants ranked by the CNPS to be “rare, threatened or endangered in California” (Lists 1A, 1B and 2).
- Listed as “locally rare” special status plant species in the NCBDR (Napa County, 2005).

Special status surveys targeted species that were identified as having the potential to occur, that have been recorded within a 5-mile radius, or that are known from specific habitat types on the project site. The original Biological Resources Assessment (Winfield, 2006) and the Biological Resources Assessment Addendum (AES, 2008) are included in **Appendix D**. Special status species were targeted based on records obtained from the CNDDDB, CNPS and USFWS, and by verbal communication with CDFG personnel.

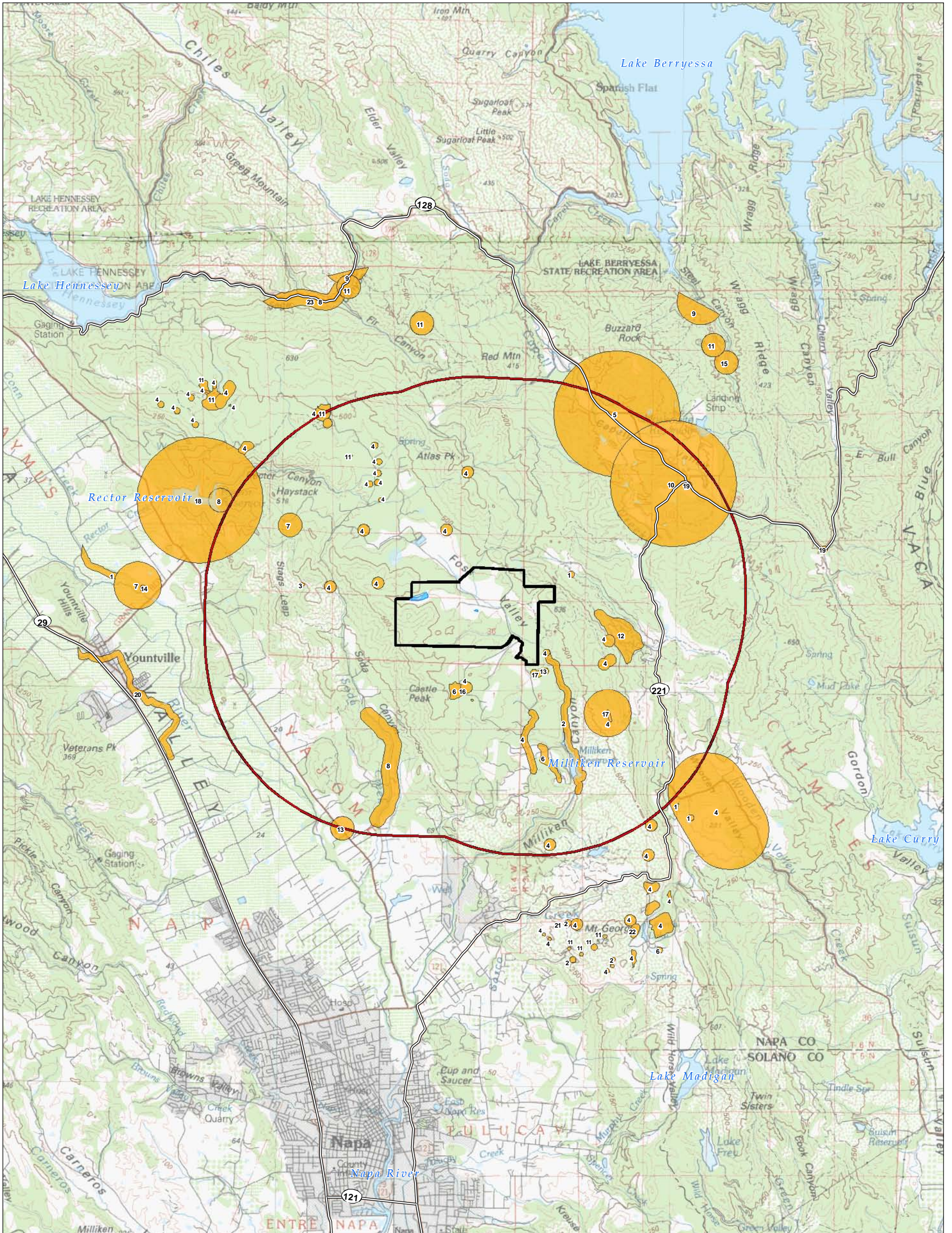
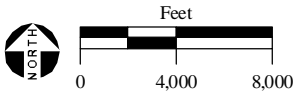
SPECIAL STATUS SPECIES DATA

-  Property Boundary
-  5 - Mile Radius
-  Existing Reservoir

-  Special Status Species Area
- 1 - northwestern pond turtle (*Actinemys marmorata marmorata*)
- 2 - narrow-anthered California brodiaea (*Brodiaea californica* var. *leptandra*)
- 3 - small-flowered calycadenia (*Calycadenia micrantha*)
- 4 - holly-leaved ceanothus (*Ceanothus purpureus*)
- 5 - serpentine cryptantha (*Cryptantha clevelandii* var. *dissita*)
- 6 - dwarf downingia (*Downingia pusilla*)
- 7 - white-tailed kite (*Elanus leucurus*)

- 8 - narrow-leaved daisy (*Erigeron angustatus*)
- 9 - two-carpellate western flax (*Hesperolinon bicarpellatum*)
- 10 - Brewer's western flax (*Hesperolinon breweri*)
- 11 - Napa western flax (*Hesperolinon* sp. nov. "serpentinum")
- 12 - Northern California black walnut (*Juglans hindsii*)
- 13 - Contra Costa goldfields (*Lasthenia conjugens*)
- 14 - Sebastopol meadowfoam (*Limnanthes vincularis*)
- 15 - robust monardella (*Monardella villosa* ssp. *globosa*)

- 16 - few-flowered navarretia (*Navarretia leucocephala* ssp. *pauciflora*)
- 17 - Northern Vernal Pool
- 18 - Sonoma beardtongue (*Penstemon newberryi* var. *sonomensis*)
- 19 - California red-legged frog (*Rana aurora draytonii*)
- 20 - foothill yellow-legged frog (*Rana boylei*)
- 21 - California beaked-rush (*Rhynchospora californica*)
- 22 - Marin checkerbloom (*Sidalcea hickmanii* ssp. *viridis*)
- 23 - green jewel-flower (*Streptanthus breweri* var. *hesperidis*)





The target species summary list is shown in **Table 4.2-3**. Species that do not have suitable habitat onsite were dismissed from consideration. These included 16 plant species, two bird species, seven fish species and one invertebrate species. Plant species dismissed due to absence of appropriate habitat include: Franciscan onion (*Allium peninsulare* var. *franciscanum*), Baker's manzanita (*Arctostaphylos bakeri* ssp. *bakeri*), Sonoma canescent manzanita (*Arctostaphylos canescens* ssp. *sonomensis*), Clara Hunt's milkvetch (*Astragalus claranus*), alkali milkvetch (*Astragalus tener* var. *tener*), San Joaquin spearscale (*Atriplex joaquiniana*), Sonoma sunshine (*Blennosperma bakeri*), pappose tarplant (*Centromadia parryii* ssp. *parryii*), Sonoma spineflower (*Chorizanthe valida*), woolly-headed gilia (*Gilia capitata* ssp. *tomentosa*), Delta tule pea (*Lathyrus jepsonii* var. *jepsonii*), Mason's lilaeopsis (*Lilaeopsis masonii*), Sebastopol meadowfoam (*Limnanthes vinculans*), marsh checkerbloom (*Sidalcea oregano* ssp. *hydrophila*), Suisan Marsh aster (*Symphotrichum lentum*; syn: *Aster lentus*) and saline clover (*T. depauperatum* var. *hydrophilum*). Two bird species dismissed include: double-crested cormorant (*Phalacrocorax auritus*) and northern spotted owl (*Strix occidentalis caurina*). Fish species known in the area for which there is no appropriate habitat on the project site: delta smelt (*Hypomesus transpacificus*), central California coastal steelhead (*Oncorhynchus mykiss*), Central Valley steelhead (*Oncorhynchus mykiss*), Central Valley spring-run chinook salmon (*Oncorhynchus tshawytscha*), winter-run chinook salmon, green sturgeon (*Acipenser medirostris*), Central Valley fall/late fall-run chinook salmon (*Oncorhynchus tshawytscha*) and Sacramento splittail (*Pogonichthys macrolepidotus*). An invertebrate species dismissed from discussion due to lack of appropriate habitat was the California freshwater shrimp (*Syncaris pacifica*).

Two Federally listed critical habitats - critical habitat for Central Valley spring-run chinook, and critical habitat for the Central Valley fall/late fall-run chinook - were also dismissed from the list, as they do not occur onsite.

In addition to the target species list in **Table 4.2-3**, the CNDDDB (CNDDDB, 2008) was queried and occurrences of special status species plotted in relation to the property boundary using GIS software (**Figure 4.2-7**). The CNDDDB reported the following special status species within a 5-mile radius of the project area: northwestern pond turtle (*Actinemys marmorata* var. *marmorata*), narrow-anthered California brodiaea (*Brodiaea californica* var. *californica*), small-flowered calycadenia (*Calycadenia micrantha*), hollyleaf ceanothus (*Ceanothus purpureus*), serpentine cryptantha (*Cryptantha clevelandii* var. *dissita*), dwarf downingia (*Downingia pusilla*), white tailed kite (*Elanus leucurus*), narrow-leaved daisy (*Erigeron angustatus*), two-carpellate western flax (*Hesperolinon bicarpellatum*), Brewer's western flax (*Hesperolinon breweri*), Napa western flax (*Hesperolinon serpentinum*), northern California black walnut (*Juglans hindsii*), Contra Costa goldfields (*Lasthenia conjugens*), Sebastopol meadowfoam (*Limnanthes vinculans*), robust-leaved monardella (*Monardella villosa* ssp. *globosa*), few-flowered navarretia (*Navarretia leucocephala* ssp. *pauciflora*), Sonoma

TABLE 4.2-3

TARGET SPECIAL STATUS SPECIES WITH POTENTIAL TO OCCUR ON THE CIRCLE S RANCH

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /OTHER STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	HABITAT PRESENT	SPECIES OBSERVED	PERIOD OF IDENTIFICATION
<b>PLANTS</b>						
<i>Amorpha californica</i> <i>var. napensis</i> Napa false indigo	-/-1B	Monterey, Marin, Napa, and Sonoma counties.	Broad-leaved upland forest (openings), chaparral, and cismontane woodland. Elevations from 12-2,000 meters.	Yes	No	April - July
<i>Asclepias solanoana</i> Serpentine milkweed	-/-4.2 <sup>1</sup>	Colusa, Glenn, Lake, Mendocino, Napa, Shasta, Sonoma, Tehama, Trinity, Yolo	Chaparral, cismontane woodland , lower montane coniferous forest/serpentinite.	Marginal; may be no serpentine soils	No	May - July
<i>Balsamorhiza</i> <i>macrolepis</i> var. <i>macrolepis</i> Big-scale balsamroot	-/-1B	Alameda, Butte, Colusa, Lake, Mariposa, Napa, Placer, Santa Clara, Solano, Sonoma, and Tehama counties; 90- 1,400 meters elevation.	Chaparral, cismontane woodland, valley and foothill grassland/sometimes serpentinite.	Yes	No	March - June
<i>Brodiaea californica</i> <i>var. leptandra</i> Narrow-anthered California brodiaea	-/-1B	Lake, Napa and Sonoma counties; 110-915 meters elevation.	Broadleaved upland forest, chaparral and lower montane coniferous forest.	Yes	No	May - July
<i>Calochortus pulchellus</i> Mt. Diablo fairy lantern	-/-1B	Extant in Alameda, Contra Costa and Solano counties, but historically was also found in Napa, Lake, Humboldt, Santa Clara and Yolo counties; 30 to 840 meters in elevation.	Cismontane woodland, riparian woodland, valley and foothill grassland, and chaparral.	Yes	No	April - June
<i>Calycadenia micrantha</i> Small-flowered calycadenia	-/-1B	Colusa, Lake, Monterey, Napa, and Trinity counties; 5-1500 meters elevation.	Chaparral, meadows and seeps, valley and foothill grassland/ roadsides, rocky talus scree, sometimes serpentine and sparsely vegetated areas.	Yes	No	June - September
<i>Ceanothus confusus</i> Rincon Ridge ceanothus	-/-1B	Lake, Mendocino, Napa, and Sonoma counties.	Closed-cone coniferous forest, Chaparral, and cismontane woodland/volcanic or serpentinite. Elevations from 75-1,065 meters.	Yes	No	February - June

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /OTHER STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	HABITAT PRESENT	SPECIES OBSERVED	PERIOD OF IDENTIFICATION
<i>Ceanothus divergens</i> Calistoga ceanothus	-/-1B	Lake, Napa, and Sonoma counties.	Chaparral communities (serpentinite or volcanic, rocky). Elevations between 170 and 950 meters.	Yes	No	February - March
<i>Ceanothus purpureus</i> Hollyleaf ceanothus	-/-1B	Napa, Solano and Sonoma counties; 120-640 meters elevation.	Chaparral and cismontane woodlands often with volcanic or rocky soils.	Yes	Observed in 1999, 2005, 2006, and 2007 surveys.	February - June
<i>Ceanothus sonomensis</i> Sonoma ceanothus	-/-1B	Napa and Sonoma counties.	Chaparral (sandy, serpentinite, or volcanic). Elevations from 215-800 meters.	Yes	No	February - April
<i>Cryptantha clevelandii</i> var. <i>dissita</i> Serpentine cryptantha	-/-1B	Lake, Mendocino, Napa and Sonoma counties; 395-580 meters elevation.	Chaparral (serpentinite).	Marginal; may be no serpentine soils	No	March - May
<i>Downingia pusilla</i> Dwarf downingia	-/-2	Fresno, Merced, Napa, Placer, Sacramento, San Joaquin, Solano, Sonoma, Stanislaus, Tehama, and Yuba counties. Also occurs in South America 1-445 meters elevation.	Valley and foothill grassland (mesic) and vernal pools.	Yes	No	March - May
<i>Erigeron biolettii</i> Streamside daisy	-/-3 <sup>1</sup>	Humboldt, Mendocino, Marin, Napa, Solano and Sonoma; 30-1100 meters elevation.	Broadleaf upland forest, cismontane woodland, and North Coast coniferous forest in rocky, mesic areas	Yes	No	June – September
<i>Erigeron greeneri</i> (syn: <i>E. angustatus</i> ) Narrow-leaved daisy	-/-1B	Napa, Sonoma, and Lake counties; 80-290 meters elevation.	Chaparral (serpentinite or volcanic).	Outside reported elevation range, but recently reported on adjacent property.	No	May - September

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /OTHER STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	HABITAT PRESENT	SPECIES OBSERVED	PERIOD OF IDENTIFICATION
<i>Eriogonum luteolum</i> var. <i>caninum</i> Tiburon buckwheat	-/-/3 <sup>1</sup>	Alameda, Colusa, Lake, Marin, Napa, Santa Clara, San Mateo, Solano, and Sonoma counties; 10-500 meters elevation.	Chaparral, coastal prairie, and valley and foothill grassland (often in serpentine soils).	Yes, marginal	No	June - September
<i>Fritillaria pluriflora</i> Adobe-lily	-/-/1B	In California, found along interior North Coast Range foothills and northern Sierra Nevada foothills.	Chaparral, woodland and grassland, often in adobe soil. Elevations from 60-705 meters.	Yes	No	February - April
<i>Hesperolinon bicarpellatum</i> Two-carpellate western flax	-/-/1B	Napa, Sonoma, and Lake counties; 60-1005 meters elevation.	Serpentine soils within chaparral habitats.	Marginal; may be no serpentine soils	No	May - July
<i>Hesperolinon breweri</i> Brewer's western flax	-/-/1B	Contra Costa, Napa and Solano counties; 30-900 meters elevation.	Chaparral, cismontane woodland, valley and foothill grassland, usually serpentinite.	Marginal; may be no serpentine soils	No	May - July
<i>Hesperolinon serpentinum</i> Napa western flax	-/-/1B	Alameda, Lake, Napa, and Stanislaus counties; 50-800 meters elevation.	Serpentine soils within chaparral habitats.	Marginal; may be no serpentine soils	No	May - July
<i>Juglans hindsii</i> Northern California black walnut	-/-/1B	Alameda, Butte, Contra Costa, Lake (questionable), Napa, Sacramento (extirpated), Solano (extirpated), Sonoma and Yolo (extirpated) counties; 0-440 meters elevation.	Riparian forest, and riparian woodland.	Yes	No	April - May

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /OTHER STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	HABITAT PRESENT	SPECIES OBSERVED	PERIOD OF IDENTIFICATION
<i>Lasthenia conjugens</i> Contra Costa goldfields	FE/-1B	Alameda, Contra Costa, Mendocino (though may be extirpated), Monterey, Marin, Napa, Santa Barbara (though may be extirpated), Santa Clara (though may be extirpated), and Sonoma counties 0-470 meters elevation.	Cismontane woodland, playas (alkaline), valley and foothill grassland and vernal pools/mesic.	Yes	No	March - June
<i>Layia septentrionalis</i> Colusa layia	-/-1B	Colusa, Glenn, Lake, Mendocino, Napa, Sonoma, Sutter, Tehama and Yolo counties; 100-1095 meters elevation.	Chaparral, cismontane woodland, valley and foothill grassland in sandy or serpentinite.	Yes	No	April - May
<i>Legenere limosa</i> Legenere	-/-1B	Alameda, Lake, Napa, Placer, Sacramento, Santa Clara, Shasta, San Joaquin, San Mateo, Solano, Sonoma, Stanislaus, Tehama, Yuba; 1-880 meters elevation.	Vernal pools.	Marginal; pools extremely small on site	No	April - June
<i>Leptosiphon jepsonii</i> Jepson's leptosiphon	-/-1B	Lake, Napa and Sonoma counties; 100-500 meters elevation.	Chaparral and cismontane woodland, usually volcanic.	Yes	No	April - May
<i>Lupinus sericatus</i> Cobb Mountain lupine	-/-1B	Colusa, Lake, Napa, and Sonoma counties; 275-1,525 meters elevation.	Broadleaved upland forest, chaparral, cismontane woodland, lower montane coniferous forest. Elevations from 275-1,525 meters.	Yes	No	March - June
<i>Micropus amphibolus</i> Mt. Diablo cottonweed	--/--3 <sup>1</sup>	Alameda, Contra Costa, Colusa, Lake, Monterey, Marin, Napa, Santa Barbara, Santa Clara, Santa Cruz, San Joaquin, San Luis Obispo, Solano and Sonoma counties; 275-1,525 meters.	Broad-leafed upland forest, chaparral, cismontane woodland, and valley and foothill grassland/rocky.	Yes	No	March - May

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /OTHER STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	HABITAT PRESENT	SPECIES OBSERVED	PERIOD OF IDENTIFICATION
<i>Monardella villosa</i> ssp. <i>globosa</i> Robust monardella	-/-/1B	Alameda, Contra Costa, Humboldt, Lake, Mendocino, Napa, Santa Clara, Santa Cruz, San Mateo, and Sonoma counties; 100-915 meters elevation.	Broad-leaved upland forest (openings), Chaparral, Cismontane woodland, Coastal scrub, and Valley and foothill grassland.	Yes	No	June - July (August)
<i>Monardella viridis</i> ssp. <i>viridis</i> Green monardella	-/-/4.3 <sup>1</sup>	Lake, Mendocino, Napa, Solano, Sonoma, Tehama and Yolo; 300-1,000 meters elevation.	Broad-leaved upland forest (openings), Chaparral, Cismontane woodland.	Yes	Yes	June - July
<i>Navarretia leucocephala</i> ssp. <i>bakeri</i> Baker's navarretia	--/-/1B	Colusa, Glenn, Lake, Mendocino, Marin, Napa, Solano, Sonoma, Sutter, Tehama, and Yolo counties; 275-1,525 meters.	Cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, vernal pools/mesic.	Yes	No	April - July
<i>Navarretia leucocephala</i> ssp. <i>pauciflora</i> Few-flowered navarretia	FE/ST/1B	Lake and Napa counties; 400-855 meters elevation.	Vernal pools on volcanic ash flow.	Marginal; vernal pools very small on site	No	May - June
<i>Navarretia rosulata</i> Marin County navarretia	-/-/1B	Marin and Napa counties; 200-635 meters elevation.	Closed-cone coniferous forest and chaparral on serpentinite, rocky substrates.	Yes, marginal	No	May - July
<i>Penstemon newberryi</i> var. <i>sonomensis</i> Sonoma beardtongue	-/-/1B	Napa, Sonoma, and Lake counties; 700-1370 meters elevation.	Rocky chaparral habitats.	Yes, marginal, out of elevation range	No	April - August
<i>Rhynchospora californica</i> California beak rush	-/-/1B	Butte, Marin, Napa and Sonoma counties; 45-1010 meters elevation.	Bogs and fens, lower montane coniferous forest, meadows and seeps, marshes and swamps (freshwater).	Yes	No	May - July
<i>Sidalcea hickmanii</i> ssp. <i>viridis</i> Marin checkerbloom	-/-/1B	Lake, Marin, Napa and Sonoma counties; 50-430 meters elevation.	Serpentine chaparral.	Marginal; may be no serpentinite soils	No	May - June
<i>Streptanthus breweri</i> var. <i>hesperidis</i> Green jewel flower	-/-/1B	Lake and Napa counties; 130-760 meters elevation.	Found in openings within chaparral habitats, very often on rocky or serpentinite soils.	Marginal; may be no serpentinite soils	No	May - July

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /OTHER STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	HABITAT PRESENT	SPECIES OBSERVED	PERIOD OF IDENTIFICATION
<i>Trifolium amoenum</i> Showy Indian clover	FE/-1B	Alameda (extirpated), Marin, Napa (extirpated), Santa Clara (extirpated), Solano (extirpated), and Sonoma (extirpated?) counties; 5-415 meters elevation	Coastal bluff scrub, valley and foothill grassland (sometimes serpentine).	Marginal; may be no serpentine soils	No	April - June
<i>Viburnum ellipticum</i> Oval-leaved viburnum	-/-2	Contra Costa, El Dorado, Fresno, Glenn, Humboldt, Mendocino, Napa, Placer, Shasta, and Sonoma counties. Also occurs in Oregon and Washington; 215- 1,400 meters elevation.	Chaparral, cismontane woodland and lower montane coniferous forest.	Yes	No	May - June
<b>ANIMALS</b>						
<b>Amphibians</b>						
<i>Rana aurora draytonii</i> California red-legged frog	FT/CSC/-	Coastal Mendocino Co. to Baja, inland through northern Sacramento Valley into the foothills of the Sierra Nevada, south to east Tulare County, and possibly eastern Kern County. Range excludes the Central Valley; 10-1160 meters elevation.	Occurs in permanent and temporary pools of streams, marshes, and ponds with dense grassy and/or shrubby vegetation.	Yes	No	March - June

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /OTHER STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	HABITAT PRESENT	SPECIES OBSERVED	PERIOD OF IDENTIFICATION
<i>Rana boylei</i> foothill yellow-legged frog	-/CSC/-	Coast Ranges from the Oregon border south to the Transverse Mountains in Los Angeles County, throughout most of Northern California west of the Cascade crest, and along the western portion of the Sierra south to Kern County, with a few isolated populations in the Central Valley; 0-1940 meters elevation.	Occurs in shallow flowing streams with some cobble in a variety of habitats including woodlands, riparian forest, coastal scrub, chaparral, and wet meadows. Rarely encountered far from permanent water sources.	Yes	Yes	March - June
<b>BIRDS</b>						
<i>Accipiter cooperii</i> Cooper's hawk	-/L <sup>2</sup> -	Siskiyou County south to San Diego County also scattered nesting in interior valleys and woodlands of Coast Range from Humboldt County south, and in western foothills of the Sierra Nevada	Deciduous, mixed, and evergreen forests, and deciduous stands of riparian habitat. Ranges from sea level to above 2700 m	Marginal nesting foraging and wintering habitat.	No	Year-round
<i>Agelaius tricolor</i> tricolored blackbird	-/CSC/-	Primarily California's Central Valley and major river valleys, as well as adjacent Mexico, with smaller populations as far north as British Columbia and into western Nevada.	Nests in freshwater marsh; forages in grasslands and croplands.	Marginal foraging habitat. No suitable nesting habitat.	No	Year-round



SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /OTHER STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	HABITAT PRESENT	SPECIES OBSERVED	PERIOD OF IDENTIFICATION
<i>Aquila chrysaetos</i> golden eagle	BCC/CFP/- <sup>2</sup>	Temperate Europe, North Asia, North America, North Africa and Japan. In California, mountainous area of Central and Southern California. Also in foothills of the Central Valley and lower Colorado River and Salton Sea; rarely along the coast and up to 10,000 feet.	Nests in large trees and cliffs; forages in open habitats.	Marginal, nesting, foraging and wintering habitat	No	Year-round or March – August (nesting)
<i>Asio otus</i> <i>long-eared owl</i>	-/CSC/-	Southeastern Yukon, northeastern British Columbia, and northern Alberta across central Canada to Maritime Provinces and south to northern Baja California, southern Arizona, southern New Mexico, east to Pennsylvania, New York and New England; also Europe and Asia. In Southern California, there is substantial area of extirpation with small remnant populations in interior areas.	Open woodlands and coniferous forests, often near riparian areas.	Marginal nesting and foraging habitat	No	March - August
<i>Athene cucularia</i> Western burrowing owl	-/CSC/-	Formerly common within the described habitats throughout the State, except the northwestern coastal forests and high mountains.	Yearlong resident of open, dry grassland and desert habitats, as well as in grass, forb and open shrub stages of pinyon-juniper and ponderosa pine habitats.	Nesting, foraging and wintering	No	April - July

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /OTHER STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	HABITAT PRESENT	SPECIES OBSERVED	PERIOD OF IDENTIFICATION
<i>Circus cyaneus</i> northern harrier	-/CSC/-	Permanent residents of the northeastern plateau and coastal areas; less common resident of the Central Valley.	Coastal scrub, Great Basin grassland, marsh and swamp (coastal and fresh water), riparian scrubs, valley and foothill grassland, and wetlands. Nests on the ground, usually in tall, dense clumps of vegetation, either alone or in loose colonies. Occurs from annual grassland up to lodgepole pine and alpine meadow habitats, as high as 3,000 meters.	Marginal all year; Nesting habitat	No	Year-round
<i>Dendroica petechia brewsteri</i> yellow warbler	-/CSC/-	Throughout northern half of continental U.S. plus Canada and Alaska; winters in Central America.	Nests in willow riparian habitats and a variety of habitats in migration.	Foraging habitat	No	March - August
<i>Elanus leucurus</i> white-tailed kite	-/CFP/-	Permanent resident of coastal and valley lowlands.	Nests in dense oak, willow, or other tree stands near open foraging areas. Hunts in herbaceous lowlands with variable tree growth.	Marginal nesting and foraging habitat	No	Year-round Peak nesting is from May-August
<i>Falco columbarius</i> merlin	-/CSC/- <sup>2</sup>	Breeds in northern forests and prairies of North America. Winters from northern parts of breeding range south to central Mexico east to the Mississippi River. There are no breeding records in California.	Nests on cliffs and forages in open habitats.	No nesting habitat and marginal foraging habitat.	No	March - August
<i>Falco mexicanus</i> prairie falcon	BCC/-/ <sup>2</sup>	Breeds from central British Columbia, southern Alberta, Saskatchewan, and North Dakota south to Baja California. Winter from northern parts of breeding range south to central Mexico east to the Mississippi River.	Nests on cliffs and forages in open habitats.	Marginal nesting and foraging habitat	No	March - August

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /OTHER STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	HABITAT PRESENT	SPECIES OBSERVED	PERIOD OF IDENTIFICATION
<i>Haliaeetus leucocephalus</i> bald eagle	-/CE/-	Throughout North America. Nests in Butte, Lake, Lassen, Modoc, Plumas, Shasta, Siskiyou, Humboldt, and Trinity Counties. Winters throughout most of California.	Breeding sites are closely tied to bodies of water in mountainous habitats. Foraging sites typically include aquatic habitats.	Marginal, foraging habitat	No	February - July
<i>Icteria virens</i> yellow-breasted chat	-/CSC/-	Erratic and localized in occurrence. Common along western edge of southern deserts, in Santa Clara Co. and on coastal slope from Monterey Co. south; uncommon in foothills surrounding Central Valley. Winters in southern coastal lowlands, Colorado River Valley; and in Northern California in small numbers.	Nests in dense riparian habitats. Typical N CA habitats include valley foothill hardwood and valley foothill hardwood-conifer.	Foraging habitat. No suitable nesting habitat.	No	March - August
<i>Lanius ludovicianus</i> loggerhead shrike	BCC/CSC/-	Year-round resident of southern half of the U.S. from California to the Carolinas, and south across the Pacific slope and interior highlands of Mexico. Resident and winter visitor in lowlands and foothills throughout California.	Nests in variety of open habitats. Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. Highest density in open-canopy valley foothill hardwood, valley foothill hardwood-conifer, valley foothill riparian, pinyon-juniper, juniper, desert riparian, and Joshua tree habitats.	Marginal nesting and foraging habitat.	No	Year-round

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /OTHER STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	HABITAT PRESENT	SPECIES OBSERVED	PERIOD OF IDENTIFICATION
<i>Pandion haliaetus</i> Osprey	-/CSC/-	Worldwide distribution. In North America. Subspecies <i>carolinensis</i> breeds from northwestern Alaska and northern Yukon to central Labrador and Newfoundland, south to Baja California, central Arizona, southern Texas, the Gulf Coast, and southern Florida. Winter in Central and South America to Argentina and Chile.	Nests near water in natural and artificial structures.	Marginal habitat, reservoir is too small to provide foraging habitat and large trees are not present near the reservoir for nesting.	No	March - August
<i>Progne subis</i> purple martin	-/CSC/-	Local summer resident in wooded low-elevation habitats throughout California; rare migrant in spring and fall, absent in winter. In the south, now only a rare and local breeder on the coast and in interior mountain ranges.	Inhabits open forests, woodlands, and riparian areas in breeding season. Found in a variety of open habitats during migration, including grassland, wet meadow, and fresh emergent wetland, usually near water. Nests in conifer stands, often in woodpecker holes. Uses valley foothill and montane hardwood and conifer, and riparian habitats.	Marginal foraging habitat. No suitable nesting habitat	No	March - August
<b>INVERTEBRATES</b>						
<i>Desmocerus californicus dimorphus</i> valley elderberry longhorn beetle (VELB)	FT/-/	Restricted to the Central Valley from Redding to Bakersfield. Counties include Amador, Butte, Calaveras, Colusa, El Dorado, Fresno, Glenn, Kern, Madera, Mariposa, Merced, Napa, Placer, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Yolo, and Yuba counties; 0-762 meters elevation.	Riparian forest communities. Exclusive host plant is elderberry ( <i>Sambucus</i> species), which must have stems $\geq$ 1-inch diameter for the beetle.	Yes, marginal, near outside limits of range	No, <i>Desmocerus californicus californicus</i> California elderberry longhorn beetle (CELB) observed	Year-round

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /OTHER STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	HABITAT PRESENT	SPECIES OBSERVED	PERIOD OF IDENTIFICATION
<b>MAMMALS</b>						
<i>Antrozous pallidus</i> pallid bat	-/CSC/-	Locally common species at low elevations. Throughout California except for the high Sierra Nevada from Shasta to Kern counties, and the northwestern corner of the state from Del Norte and western Siskiyou counties to northern Mendocino County.	Habitats occupied include grasslands, shrublands, woodlands and forests from sea level through mixed conifer forests below 2,000 meters. The species is most common in open, dry habitats with rocky areas for roosting. Roosts also include cliffs, abandoned buildings, bird boxes, and under bridges.	Roosting and foraging habitats	No	March - September
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	-/CSC/Red	Throughout California, excluding subalpine and alpine habitats. Through Mexico to British Columbia and the Rocky Mountain states. Also occurs in several regions of the central Appalachians.	Requires caves, mines, tunnels, buildings, or other human-made structures for roosting. Hibernation sites must be cool and cold, but above freezing.	Foraging habitat	No	March - September
<i>Myotis thysanodes</i> fringed myotis	-/Red	Widespread in California, occurring in all but the Central Valley and Colorado and Mojave deserts.	Roosts in rock crevices, trees and mines; forages in scrub and woodlands.	Roosting and foraging habitats	No	March - September
<i>Myotis evotis</i> Long-eared myotis	-/CSC/Red	Throughout western North America from British Columbia to Baja California.	Primarily found in coniferous forests, but known from chaparral, semiarid shrublands, and agriculture.	Roosting and foraging	No	March - September
<i>Taxidea taxus</i> American badger	-/CSC/-	Found throughout most of California in suitable habitat except North Coast.	Suitable habitat occurs in the drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Badgers are generally associated with treeless regions, prairies, parklands, and cold desert areas.	Yes	No	All year

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /OTHER STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	HABITAT PRESENT	SPECIES OBSERVED	PERIOD OF IDENTIFICATION
<b>Reptiles</b>						
<i>Actinemys marmorata</i> western pond turtle	-/CSC/-	West coast of North America from southern Washington, USA to northern Baja California, Mexico. Many populations have been extirpated and others continue to decline throughout the range, especially in southern California.	Requires aquatic habitats with suitable basking sites. Nest sites most often characterized as having gentle slopes (<15percent) with little vegetation or sandy banks.	Yes	Yes, 2006, 2008	March - October

<sup>1</sup>This species is not documented within the CNDDDB because it is not listed pursuant through the CEQA review process. The DFG requires that all CNPS List 1B and 2 plant species be addressed for CEQA projects. Though it is not required for the CEQA review process, CNPS recommends that List 3 and List 4 plant species also be considered. AES considered CNPS List 3 and 4 species during this survey.

<sup>2</sup>Bird species that have been removed as state species of concern based on a joint publication by Western Field Ornithologists and CDFG (Shuford and Gardali, 2008).

#### STATUS CODES

##### FEDERAL: U.S. Fish and Wildlife Service and National Marine Fisheries Service

FE Listed as Endangered by the Federal Government  
 FT Listed as Threatened by the Federal Government  
 BCC Fish and Wildlife Service Birds of Conservation Concern

##### STATE: California Department of Fish and Game

CE Listed as Endangered by the State of California  
 CT Listed as Threatened by the State of California  
 CSC California Species of Special Concern  
 CFP California Fully Protected Species

##### OTHER:

##### CNPS: California Native Plant Society

List 1B Plants rare or endangered in California and elsewhere  
 List 2 Plants rare or endangered in California, but more common elsewhere  
 List 3 Plants for which more information is needed  
 List 4 Plants of limited distribution

##### Western Bat Working Group

Red Bats imperiled or are at high risk of imperilment.  
 Yellow Bats whose status warrants closer evaluation and are threatened with imperilment.

**Note:** The report *Biological Resources, Circle S Ranch, Napa County, CA* prepared by Ted Winfield and Associates, December 2006 stated that the project site provides suitable habitat for western red bat (*Lasiurus borealis*) and long-legged myotis (*Myotis volans*). However, these bats have no status under CEQA; they have been given a Red status (defined above) by the Western Bat Working Group. In addition, the nearest CNDDDB record for the long-legged myotis is in Placer County (roughly 100 miles away) and there are no records for the western red bat in Napa County.

Sources: USFWS, 2007b; CDFG, 2003; CNDDDB, 2005; Western Working Bat Group, 2007; Berner, et al., 2003.

beardtongue (*Penstemon newberryi* var. *sonomensis*), California red-legged frog (*Rana aurora* ssp. *sonomensis*), foothill yellow-legged frog (*Rana boylei*), California beak rush (*Rhynchospora californica*), Marin checkerbloom (*Sidalcea hickmanii* ssp. *viridis*), green jewel flower (*Streptanthus breweri* var. *hesperidis*). Of the plants listed above, suitable habitat within the proper elevation range occurs onsite for small-flowered calycadenia, hollyleaf ceanothus, serpentine cryptantha, dwarf downingia, two-carpellate western flax, Brewer's western flax, Napa western flax, Contra Costa goldfields, robust-leaved monardella, few-flowered navarretia, Sonoma beardtongue, California beak rush, Marin checkerbloom, and green jewel flower.

Suitable habitat occurs on the project site for all of the four animal special status species mapped within a 5-mile radius: the northwestern pond turtle, the white tailed kite, the California red-legged frog and the foothill yellow-legged frog. Target species and species identified within the 5-mile radius of the project site summarized in **Table 4.2-3** are discussed below. Northern Vernal Pool and Northern Claypan Vernal Pool were the only sensitive habitat types recorded in the CNDDDB within a 5-mile radius of the project area.

#### 4.2.4-1 SPECIAL STATUS PLANTS

At the specific request of CDFG and Napa County, two plant species were included in the target special status plants species searches: the Mt. Diablo Fairy Lantern (*Calochortus pulchellus*) and robust-leaved monardella (*Monardella villosa* ssp. *globosa*). All of the special status plant species, excluding those for which no appropriate habitat was found on the project site, are described briefly below.

##### **Napa false indigo (*Amorpha californica* var. *napensis*)**

Pea Family (Fabaceae)

Federal Status – None

State Status – None

Other – CNPS 1B

Napa false indigo is a deciduous shrub found in cismontane woodland, chaparral, and openings of broadleaved upland forest from 120 to 2,000 meters. Blooming period is from April through July. Napa false indigo is known from Monterey, Marin, Napa, and Sonoma counties. The nearest occurrence is from an unknown date and is approximately 8.3 miles southwest of the project site. The project site provides potential habitat for Napa false indigo within the chaparral and oak woodland habitats. The biological surveys were conducted within the evident and identifiable period for Napa false indigo. Napa false indigo was not observed during the biological surveys of the project site. Napa false indigo does not occur within the project site.

**Serpentine milkweed (*Asclepias solanoana*)**

Dogbane Family (Apocynaceae; formerly Asclepiadaceae)

Federal Status – None

State Status – None

Other – CNPS 1B

Serpentine milkweed is a perennial herb found on serpentinite soils in cismontane woodland, and lower montane coniferous forest from 230 to 1,860 meters. Blooming period is from May through July, and uncommonly in August. Serpentine milkweed is known from Colusa, Glenn, Lake, Mendocino, Napa, Shasta, Sonoma, Tehama, Trinity, and Yolo counties. There are no CNDDDB records mapped for this species. The project site provides potential habitat for Serpentine milkweed on the rock outcrop and leather oak-white leaf manzanita-chamise xeric habitats. The biological surveys were conducted within the evident and identifiable period for serpentinite milkweed. Serpentine milkweed was not observed during the biological surveys of the project site. Serpentine milkweed does not occur within the project site.

**Big-scale balsamroot (*Balsamorhiza macrolepis* var. *macrolepis*)**

Sunflower Family (Asteraceae)

Federal Status – None

State Status – None

Other – CNPS 1B

Suitable habitat includes chaparral, woodland, and open grassland, and it is generally found in grassy slopes and valleys. This species is known to occur on serpentine soils, but is not obligated to these soils. Its range includes the Sierra Nevada Foothills, Sacramento Valley, and San Francisco Valley regions of the California Floristic Province. The big-scale balsamroot blooms from March through June. The nearest occurrence of this species to the project site is in American Canyon, over 20 miles south of the site. The project site provides potential habitat for big-scale balsamroot within the chaparral, annual grassland, and oak woodland, and leather oak-white leaf manzanita-chamise xeric habitats. The biological surveys were conducted within the evident and identifiable period for big-scale balsamroot. Big-scale balsamroot was not observed during the biological surveys of the project site. Big-scale balsamroot does not occur within the project site.

**Narrow-anthered California brodiaea (*Brodiaea californica* var. *leptandra*)**

Lily Family (Liliaceae)

Federal Status – None

State Status – None

Other – CNPS 1B



Narrow-anthered California brodiaea typically occurs from 110 to 915 meters elevation in broadleaf upland forest, chaparral, cismontane woodland, lower montane coniferous forest, and valley and foothill grassland in volcanic and serpentinite soils. The ideal period of identification is from May through July. It is found in Lake, Napa and Sonoma counties. The nearest recorded occurrence of this species is in Milliken Canyon, within one mile of the project site. The project site provides potential habitat for narrow-anthered California brodiaea within the chaparral, annual grassland, oak woodland, and leather oak-white leaf manzanita-chamise xeric serpentine habitats. The biological surveys were conducted within the evident and identifiable period for narrow-anthered California brodiaea. Narrow-anthered California brodiaea was not observed during the biological surveys of the project site. Narrow-anthered California brodiaea does not occur within the project site.

**Mt. Diablo fairy lantern (*Calochortus pulchellus*)**

Lily family (Liliaceae)

Federal Status -- None

State Status -- None

Other -- CNPS 1B

The Mt. Diablo fairy lantern occurs on wooded slopes (cismontane woodland, riparian woodland, and valley and foothill grassland) and chaparral, from 30 to 840 meters in elevation. It is extant in Alameda, Contra Costa and Solano counties, but historically was also found in Napa, Lake, Humboldt, Santa Clara and Yolo counties. Mt. Diablo fairy lantern bloom season is from April to June. Records for Napa County (Hickman, J. C. 1993b) indicate that it has not been documented there since 1967. Grazing, urbanization, horticultural collection, and feral pigs have reduced the geographical range and abundance of populations. The nearest extant occurrence to the project site of this species is in adjacent Solano County, near the border between Solano and Napa counties. The project site provides potential habitat for Mt. Diablo fairy lantern within the annual grassland, chaparral, oak woodland, and Valley oak riparian forest habitats. The biological surveys were conducted within the evident and identifiable period for Mt. Diablo fairy lantern. Mt. Diablo fairy lantern was not observed during the biological surveys. Mt. Diablo fairy lantern does not occur within the project site.

**Small-flowered calycadenia (*Calycadenia micrantha*)**

Sunflower Family (Asteraceae)

Federal Status – None

State Status – None

CNPS – List 3

Small-flowered calycadenia is found within chaparral communities, meadows and seeps with volcanic soils, and in valley and foothill grasslands along roadsides, on rocky, talus, scree,

sometimes serpentinite, and generally sparsely vegetated areas. Small-flowered calycadenia blooms from June to September. The nearest known occurrence of this species is a couple miles southwest in Soda Canyon, the only record for Napa County. The project site provides potential habitat for small-flowered calycadenia within the chaparral and annual grassland habitats. The biological surveys were conducted within the evident and identifiable period for Small-flowered calycadenia. Small-flowered calycadenia was not observed during the biological surveys. Small-flowered calycadenia does not occur within the project site.

**Rincon Ridge ceanothus (*Ceanothus confusus*)**

Buckthorn family (Rhamnaceae)

Federal Status – None

State Status – None

Other – CNPS 1B

Rincon-Ridge ceanothus is an evergreen shrub found on volcanic or serpentinite soils from 75 to 1,065 meters. Blooming period is from February through June. Rincon-Ridge ceanothus is known from Lake, Mendocino, Napa, and Sonoma counties. The nearest occurrence is from 1982 and is approximately 10 miles west of the project site. The project site provides potential habitat for Rincon-Ridge ceanothus within the soils on the rock outcrop and leather oak-white leaf Manzanita-chamise xeric serpentine habitat. The biological surveys were conducted within the evident and identifiable period for Rincon-Ridge ceanothus. Rincon-Ridge ceanothus was not observed during the biological surveys. Rincon-Ridge ceanothus does not occur within the project site.

**Calistoga ceanothus (*Ceanothus divergens*)**

Buckthorn family (Rhamnaceae)

Federal Status – None

State Status – None

Other – CNPS 1B

Calistoga ceanothus is an evergreen shrub found in chaparral communities commonly on rocky volcanic or serpentinite soils from 170 to 950 meters. Blooming period is from February through March. Calistoga ceanothus is known from Lake, Napa, and Sonoma counties. The nearest CNDDDB occurrence is from an unknown date and is approximately 9.5 miles west of the project site. The project site provides potential habitat for Calistoga ceanothus within the chaparral, the rock outcrop, and the leather oak-white leaf manzanita-chamise xeric serpentine habitats. The biological surveys were conducted within the evident and identifiable period for Calistoga ceanothus. Calistoga ceanothus was not observed during the biological surveys. Calistoga ceanothus does not occur within the project site.

**Hollyleaf ceanothus (*Ceanothus purpureus*)**

Buckthorn family (Rhamnaceae)

Federal Status – None

State Status – None

Other – CNPS 1B

Hollyleaf ceanothus is an evergreen shrub found on dry, rocky volcanic slopes (chaparral and cismontane woodland communities), from 120 to 640 meters in elevation. It is an endemic shrub that can be locally abundant primarily in Napa County. Hollyleaf ceanothus is known from Napa, Solano, and Sonoma counties. It blooms from February to June. The nearest CNDDDB occurrence is from 1987 and is approximately 0.04 miles southeast of the project site on the adjacent parcel. The project site provides potential habitat for hollyleaf ceanothus within the chaparral and oak woodland habitats. The biological surveys were conducted within the evident and identifiable period for hollyleaf ceanothus. Hollyleaf ceanothus was observed in four locations during the biological surveys of the project site (**Appendix D**). Hollyleaf ceanothus occurs within the project site.

**Sonoma ceanothus (*Ceanothus sonomensis*)**

Buckthorn family (Rhamnaceae)

Federal Status – None

State Status – None

Other – CNPS 1B

Sonoma ceanothus is an evergreen shrub usually found on sandy, serpentinite or volcanic soils from 215 to 800 meters. Sonoma ceanothus is known from Napa and Sonoma counties. The nearest occurrence is from an unknown date and is approximately 9.5 miles west of the project site. The project site provides potential habitat for Sonoma ceanothus within the rock outcrop and the leather oak-white leaf Manzanita-chamise xeric serpentine habitat. The biological surveys were conducted within the evident and identifiable period for Sonoma ceanothus. Sonoma ceanothus was not observed during the biological surveys. Sonoma ceanothus does not occur within the project site.

**Serpentine cryptantha (*Cryptantha clevelandii* var. *dissita*)**

Borage Family (Boraginaceae)

Federal Status – None

State Status – None

Serpentine cryptantha has been recorded in Lake, Napa and Sonoma counties on serpentinite soils in chaparral. It blooms between March and May. The nearest record of this species is the only one in Napa County, about three miles northeast of the project site in Capell Valley. The project site provides potential habitat for serpentine cryptantha within the

rock outcrop and the leather oak-white leaf manzanita-chamise xeric serpentine habitat. The biological surveys were conducted within the evident and identifiable period for serpentine cryptantha. Serpentine cryptantha was not observed during the biological surveys. Serpentine cryptantha does not occur within the project site.

**Dwarf downingia (*Downingia pusilla*)**

Bellflower Family (Campanulaceae)

Federal Status – None

State Status – None

Other – CNPS 2

Endemic to vernal pools, dwarf downingia is an obligate wetland plant. The species can grow up to six inches in height and is slightly succulent with small white to blue flowers. The small corolla and untwisted ovary distinguish the species from other *Downingia* species. Blooming periods range from March to May when vernal pools enter the dry out phase. The closest occurrence of this species to the project site is approximately within one mile east of the project site. The project site provides potential habitat for dwarf downingia within the wetland features. The biological surveys were conducted within the evident and identifiable period for dwarf downingia. Dwarf downingia was not observed during the biological surveys. Dwarf downingia does not occur within the project site.

**Biolett's erigeron/streamside daisy (*Erigeron bioletti*)**

Sunflower Family (Asteraceae)

Federal Status – None

State Status – None

CNPS – List 3

The ideal period for identification of this species is June through September. Biolett's erigeron typically occurs 30 to 1,100 meters above sea level in broadleaf upland, cismontane woodland and north coast coniferous forests in rocky or mesic substrates. The range of Biolett's erigeron includes Humboldt, Mendocino, Marin, Napa, Solano and Sonoma counties. CNPS recommends that List 3 and List 4 plant species also be considered should other local and/or regional ordinances or constraints request or require evaluation. This species is not documented within the CNDDDB because it is not listed through the CEQA review process. The project site provides potential habitat for Biolett's erigeron within the oak woodland habitat. The biological surveys were conducted within the evident and identifiable period for Biolett's erigeron. Biolett's erigeron was not observed during the biological surveys. Biolett's erigeron does not occur within the project site.

**Narrow-leaved daisy (*Erigeron greenei*; syn: *Erigeron angustatus*)**

Sunflower Family (Asteraceae)

Federal Status – None

State Status – None

CNPS – List 1B

The narrow-leaved daisy is distinguished by discoid heads that lack pistillate flowers, with nonglandular linear leaves evenly sized and spaced along a stem that is 30 to 90 centimeters tall from a woody base. It is found within chaparral communities on serpentine soils. The plant occurs in Napa, Sonoma, and Lake counties. The nearest CNDDDB record is from 1938 and is approximately 1.3 miles southwest of the project site. The project site provides potential habitat for narrow-leaved daisy within the chaparral and leather oak-white leaf manzanita-chamise xeric serpentine habitats. The biological surveys were conducted within the evident and identifiable period for narrow-leaved daisy. Narrow-leaved daisy was not observed during the biological surveys. Narrow-leaved daisy does not occur within the project site.

**Tiburon buckwheat (*Eriogonum luteolum var. caninum*)**

Buckwheat Family (Polygonaceae)

Federal Status – None

State Status – None

CNPS – List 3

Tiburon buckwheat is an annual herb found within chaparral, coastal prairie, and valley and foothill grassland on granite or serpentine soils. The plant has been found in Alameda, Colusa, Lake, Marin, Napa, Santa Clara, San Mateo, Solano and Sonoma (extirpated) counties. The nearest CNDDDB record is from an unknown date and is approximately 30 miles southwest of the project site. The project site provides potential habitat for Tiburon buckwheat within the chaparral, annual grassland, and leather oak-white leaf manzanita-chamise xeric serpentine habitats. The biological surveys were conducted within the evident and identifiable period for Tiburon buckwheat. Tiburon buckwheat was not observed during the biological surveys. Tiburon buckwheat does not occur within the project site.

**Adobe lily (*Fritillaria pluriflora*)**

Lily family (Liliaceae)

Federal Status – None

State Status – None

Other – CNPS 1B

Adobe lily is a bulbiferous herb often found on adobe soils in chaparral, cismontane woodland, and Valley and foothill grassland from 60 to 705 meters. Blooming period occurs

from February through April. Adobe lily is known from Butte, Colusa, Glenn, Lake, Napa, Solano, Tehama, and Yolo counties. The nearest occurrence is from 1913 and is approximately 9.5 miles west of the project site. The project site provides potential habitat for adobe lily within the chaparral, annual grassland, and oak woodland habitats. The biological surveys were conducted within the evident and identifiable period for adobe lily. Adobe lily was not observed during the biological surveys. Adobe lily does not occur within the project site.

**Two-carpellate western flax (*Hesperolinon bicarpellatum*)**

Flax Family (Linaceae)

Federal Status – None

State Status – None

CNPS – List 1B

Two-carpellate western flax is found on serpentine soils in chaparral communities. This plant is known to occur in Lake, Napa, and Sonoma counties. The nearest reported occurrences are in Sage Canyon and Steel Canyon, both approximately five miles north of the project site. The project site provides potential habitat for two-carpellate western flax within the chaparral and leather oak-white leaf manzanita-chamise xeric serpentine habitats. The biological surveys were conducted within the evident and identifiable period for two-carpellate western flax. Two-carpellate western flax was not observed during the biological surveys. Two-carpellate western flax does not occur within the project site.

**Brewer's dwarf flax (*Hesperolinon breweri*)**

Flax Family (Linaceae)

Federal Status – None

State Status – None

Other – CNPS 1B

Brewer's dwarf flax is an annual herb found in chaparral, grassland, and oak woodland habitats, sometimes in serpentine soils. Brewer's dwarf flax is known from Napa, Solano and Contra Costa counties. The species blooms from May to July. The nearest reported occurrence is in Capell Valley, about three miles from the site. The project site provides potential habitat for Brewer's dwarf flax within the chaparral, annual grassland, oak woodland, and leather oak-white leaf manzanita-chamise xeric serpentine habitats. The biological surveys were conducted within the evident and identifiable period for Brewer's dwarf flax. Brewer's dwarf flax was not observed during the biological surveys. Brewer's dwarf flax does not occur within the project site.

**Napa western flax (*Hesperolinon serpentinum*)**

Flax Family (Linaceae)

Federal Status – None

State Status – None

CNPS – List 1B

Napa western flax is found on serpentine soils in chaparral communities in Alameda, Lake, Napa, and Stanislaus counties. The nearest documented populations occur just a couple miles northwest of the project site. The project site provides potential habitat for Napa western flax within the chaparral and leather oak-white leaf manzanita-chamise xeric serpentine habitats. The biological surveys were conducted within the evident and identifiable period for Napa western flax. Napa western flax was not observed during the biological surveys. Napa western flax does not occur within the project site.

**Northern California black walnut (*Juglans hindsii*)**

Federal Status – None

State Status – None

Other – CNPS 1B

The Northern California black walnut is found in riparian habitat. Only two of the four extant stands remain. The nearest extant occurrence is about one mile east of the site. The project site provides potential habitat for Northern California black walnut within the Valley oak-riparian forest. The biological surveys were conducted within the evident and identifiable period for Northern California black walnut. Northern California black walnut was not observed during the biological surveys. Northern California black walnut does not occur within the project site.

**Contra Costa goldfields (*Lasthenia conjugens*)**

Sunflower Family (Asteraceae)

Federal Status – Endangered

State Status – None

Other – CNPS 1B

Contra Costa goldfields is an annual herb found in vernal pools, woodland, grassland, and alkaline playas, up to about 500 meters elevation. Contra Costa goldfields are distributed along the North (Marin, Mendocino and Sonoma Counties), Central (Monterey County), and South (Santa Barbara County) Coasts; San Francisco Bay Area (Alameda, Contra Costa, Napa and Santa Clara counties); and southern Sacramento Valley (Solano County) near the Delta. Its blooming period extends from March to June. The nearest reported occurrence of this species is about two miles southeast of the project site. The project site provides potential habitat for Contra Costa goldfields within the wetland features, oak woodland, and

annual grassland habitats. The biological surveys were conducted within the evident and identifiable period for Contra Costa goldfields. Contra Costa goldfields was not observed during the biological surveys. California goldfields (*Lasthenia californica*) and smooth goldfields (*Lasthenia glaberima*) were observed onsite (Winfield, 2006); these are not special status species. Contra Costa goldfields does not occur within the project site.

**Colusa layia (*Layia septentrionalis*)**

Sunflower Family (Asteraceae)

Federal Status – None

State Status – None

Other – CNPS 1B

Colusa layia is found on serpentine or sandy soils in chaparral, cismontane woodland, and valley and foothill grasslands. This species blooms from April to May. There are records in Colusa, Glenn, Lake, Mendocino, Napa, Sonoma, Sutter, Tehama and Yolo counties. The nearest CNDDDB occurrence is from 1998 and is approximately 7.8 miles northwest of the project site. The project site provides potential habitat for Colusa layia within the chaparral, oak woodland, and annual grassland habitats. The biological surveys were conducted within the evident and identifiable period for Colusa layia. Colusa layia was not observed during the biological surveys. Colusa layia does not occur within the project site.

**Legenere (*Legenere limosa*)**

Bellflower family (Campanulaceae)

Federal Status – None

State Status – None

Other – CNPS 1B

Legenere is an annual herb found in wet areas and vernal pools. There are records in Alameda, Lake, Napa, Placer, Sacramento, Santa Clara, Shasta, San Joaquin, San Mateo, Solano, Sonoma, Stanislaus, Tehama and Yuba counties. It ranges from 1 to 880 meters elevation and blooms April through June. The nearest occurrence is from 1990 and is approximately 11 miles south of the project site. The project site provides potential habitat for legenere within the wetland features. The biological surveys were conducted within the evident and identifiable period for legenere. Legenere was not observed during the biological surveys. Legenere does not occur within the project site.



**Jepson's leptosiphon (*Leptosiphon jepsonii*)**

Phlox Family (Polemoniaceae)

Federal Status – None

State Status – None

Other – CNPS 1B

Jepson's leptosiphon is an annual herb found in grassland habitat without volcanic soils. The blooming period ranges from April to May. Jepson's leptosiphon is known to occur in Lake, Napa and Sonoma counties. The nearest reported CNDDDB occurrence is from 1938 and is approximately 5.8 miles east of the project site; however, this plant was observed on a neighboring property with a pending Erosion Control Plan application (Walt Ranch; P07-00800-ECPA) approximately one mile from the proposed project. This occurrence does not yet appear in CNDDDB. The project site provides potential habitat for Jepson's leptosiphon within the annual grassland habitat. The biological surveys were conducted within the evident and identifiable period for Jepson's leptosiphon. Jepson's leptosiphon was not observed during the biological surveys. Jepson's leptosiphon does not occur within the project site.

**Cobb Mountain lupine (*Lupinus sericatus*)**

Pea Family (Fabaceae)

Federal Status – None

State Status – None

Other – CNPS 1B

Cobb Mountain lupine is a perennial herb found in broadleafed upland forest, chaparral, cismontane woodland, and lower montane coniferous forest from 275 to 1,525 meters. Blooming period is from March through June. Cobb Mountain lupine is known from Colusa, Napa, and Sonoma counties. The nearest occurrence is from 1997 and is approximately 8.5 miles southwest of the project site. The project site provides potential habitat for Cobb Mountain lupine within the chaparral and oak woodland habitats. The biological surveys were conducted within the evident and identifiable period for Cobb Mountain lupine. Cobb Mountain lupine was not observed during the biological surveys. Cobb Mountain lupine does not occur within the project site.

**Mt. Diablo cottonweed (*Micropus amphibolus*)**

Sunflower Family (Asteraceae)

Federal Status -- None

State Status -- None

Other -- CNPS 3

Mt. Diablo cottonweed is an annual herb found in broad-leaved upland forest, chaparral, cismontane woodland, and valley and foothill grassland in rocky substrates. It occurs in Alameda, Contra Costa, Colusa, Lake, Monterey, Marin, Napa, Santa Barbara, Santa Clara, Santa Cruz, San Joaquin, San Luis Obispo, Solano and Sonoma counties. It blooms March through May. This species is not documented within the CNDDDB because it is not listed pursuant through the CEQA review process. The CDFG requires that all CNPS List 1B and 2 plant species be addressed for CEQA projects. Though it is not required for the CEQA review process, CNPS recommends that List 3 and List 4 plant species also be considered. The project site provides potential habitat for Mt. Diablo cottonweed within the chaparral, annual grassland, and oak woodland habitats. The biological surveys were conducted within the evident and identifiable period for Mt. Diablo cottonweed. Mt. Diablo cottonweed was not observed during the biological surveys. Mt. Diablo cottonweed does not occur within the project site.

**Robust-leaved monardella/robust-leaved coyote mint (*Monardella villosa* ssp. *globosa*)**

Mint Family (Lamiaceae)

Federal Status -- None

State Status -- None

Other -- CNPS 1B

Robust-leaved coyote mint is a rhizomatous, unbranched perennial herb found in openings of chaparral, cismontane woodland, coastal scrub, and Valley and foothill grassland. Robust-leaved monardella is known to occur in Contra Costa, Humboldt, Lake, Mendocino, Napa, Santa Clara, Santa Cruz, San Mateo, and Sonoma counties. Blooming period is from June to July, and occasionally August. The nearest occurrence is from 1913 and is approximately 4.5 miles northeast of the project site. The project site provides potential habitat for robust-leaved coyote mint within the chaparral, annual grassland, and oak woodland habitats. The biological surveys were conducted within the evident and identifiable period for robust-leaved coyote mint. Robust-leaved coyote mint was not observed during the biological surveys. Robust-leaved coyote mint does not occur within the project site.

**Green monardella/green coyote mint (*Monardella viridis* ssp. *viridis*)**

Mint Family (Lamiaceae)

Federal Status -- None

State Status -- None

Other -- CNPS 4.3

Green monardella is a rhizomatous herb found in broadleaved upland forest, chaparral, and cismontane woodland from 100 to 1010 meters. Blooming period is from June through

September. Green monardella is known to occur in Lake, Napa, Solano, and Sonoma counties. This species is not documented within the CNDDDB because it is not listed pursuant through the CEQA review process. The CDFG requires that all CNPS List 1B and 2 plant species be addressed for CEQA projects. Though it is not required for the CEQA review process, CNPS recommends that List 3 and List 4 plant species also be considered. The project site provides potential habitat for green monardella within the chaparral and oak woodland habitats. The biological surveys were conducted within the evident and identifiable period for green monardella. Green monardella was observed during the biological surveys in several locations onsite, including a few scattered individuals within Blocks 17B and 20. Green monardella occurs within the project site.

**Baker's navarretia (*Navarretia leucocephala* ssp. *bakeri*)**

Phlox Family (Polemoniaceae)

Federal Status -- None

State Status -- None

Other -- CNPS 1B

Baker's navarretia is an annual herb found in cismontane woodland, lower montane coniferous forest, meadows and seeps, Valley and foothill grassland, and mesic vernal pools from 275 to 1,525 meters. Blooming period is from April through July. Baker's navarretia is known from Colusa, Glenn, Lake, Mendocino, Marin, Napa, Solano, Sonoma, Sutter, Tehama, and Yolo counties. The nearest occurrence is from 1916 and is approximately 13 miles east of the project site. The project site provides potential habitat for Baker's navarretia within the wetland features and the annual grassland and oak woodland habitats. The biological surveys were conducted within the evident and identifiable period for Baker's navarretia. Baker's navarretia was not observed during the biological surveys. Baker's navarretia does not occur within the project site.

**Few-flowered navarretia (*Navarretia leucocephala* ssp. *pauciflora*)**

Phlox Family (Polemoniaceae)

Federal Status -- None

State Status -- Threatened

Other -- CNPS 1B

Few-flowered navarretia is found in vernal pools with volcanic substrate. This species is known from Lake and Napa counties. The bloom period varies in the spring with water level and flood duration. The nearest CNDDDB record is from 1913 and is mapped approximately 13 miles east of the project site. The nearest CNDDDB occurrence is from 1987 and is approximately 0.07 miles southeast of the project site. The project site provides potential habitat for few-flowered navarretia within the wetland features. The biological surveys were conducted within the evident and identifiable period for few-flowered navarretia. Few-

flowered navarretia was not observed during the biological surveys. Few-flowered navarretia does not occur within the project site.

**Marin County navarretia (*Navarretia rosulata*)**

Phlox Family (Polemoniaceae)

Federal Status -- none

State Status -- none

Other -- CNPS 1B

Marin County navarretia is found in closed-cone coniferous forest and chaparral on rocky, serpentine areas in Napa and Marin counties. The bloom period is from May to July. The nearest CNDDDB occurrence is from 1987 and is approximately 11 miles northwest of the project site. The project site provides potential habitat for Marin County navarretia within the chaparral and leather oak-white leaf manzanita-chamise xeric serpentine habitats. The biological surveys were conducted within the evident and identifiable period for Marin County navarretia. Marin County navarretia was not observed during the biological surveys. Marin County navarretia does not occur within the project site.

**Sonoma beardtongue (*Penstemon newberryi* var. *sonomensis*)**

Figwort Family (Scrophulariaceae)

Federal Status – None

State Status – None

CNPS – List 1B

Sonoma beardtongue is found in chaparral communities in Lake, Napa, and Sonoma counties. The bloom period is from April to August. The nearest CNDDDB occurrence is from an unknown date and is approximately 2.8 miles northwest of the project site. The project site provides potential habitat for Sonoma beardtongue within the chaparral habitat. The biological surveys were conducted within the evident and identifiable period for Sonoma beardtongue. Sonoma beardtongue was not observed during the biological surveys. Sonoma beardtongue does not occur within the project site.

**California beakrush (*Rhynchospora californica*)**

Sedge Family (Cyperaceae)

Federal Status – None

State Status – None

Other – CNPS 1B

California beakrush is a rhizomatous herb found in bogs and fens, lower montane coniferous forest, meadows and seeps, and freshwater marshes and swamps. This species is known to occur in Butte, Marin, Mariposa, Napa and Sonoma counties. It blooms from May to July.

The nearest CNDDDB occurrence is from 2003 and is approximately 4 miles south of the project site. The project site provides potential habitat for California beakrush within the wetland features. The biological surveys were conducted within the evident and identifiable period for California beakrush. California beakrush was not observed during the biological surveys. California beakrush does not occur within the project site.

**Marin checkerbloom (*Sidalcea hickmanii* var. *viridis*)**

Mallow Family (Malvaceae)

Federal Status – none

State Status – none

CNPS – List 1B

Marin checkerbloom is a perennial herb found on serpentinite soils in chaparral. Marin checkerbloom is known to occur in Lake, Marin, Napa and Sonoma counties. This species blooms May to June. The nearest record is from 1992 and is approximately 4.4 miles south of the project site. The project site provides potential habitat for Marin checkerbloom within the chaparral and leather oak-white leaf manzanita-chamise xeric serpentine habitats. The biological surveys were conducted within the evident and identifiable period for Marin checkerbloom. Marin checkerbloom was not observed during the biological surveys. Marin checkerbloom does not occur within the project site.

**Green jewel flower (*Streptanthus breweri* var. *hesperidis*)**

Mustard Family (Brassicaceae)

Federal Status – None

State Status – None

CNPS – List 1B

Green jewel flower is found on rocky serpentine soils in chaparral openings and cismontane woodlands. Green jewel flower is known to occur in Lake and Napa counties. The nearest CNDDDB occurrence is from 1947 and is approximately 4.5 miles northwest of the project site. The biological surveys were conducted within the evident and identifiable period for green jewel flower. Green jewel flower was not observed during the biological surveys. Green jewel flower does not occur within the project site.

**Showy Indian clover/two-fork clover (*Trifolium amoenum*)**

Pea Family (Fabaceae)

Federal Status – None

State Status – None

CNPS – List 1B

Showy Indian clover is annual herb found in moist, heavy soils in disturbed areas of coastal bluff scrub and valley and foothill grassland, occasionally on serpentinite soils. Showy

Indian clover is known from Alameda, Marin, Napa, Santa Clara and Solano counties. The bloom period is from April to June. The nearest CNDDDB record is from 1951 and is approximately 6.2 miles southwest of the project site. The biological surveys were conducted within the evident and identifiable period for showy Indian clover. Showy Indian clover was not observed during the biological surveys. Showy Indian clover does not occur within the project site.

**Oval-leaved viburnum (*Viburnum ellipticum*)**

Honeysuckle Family (Caprifoliaceae)

Federal Status – None

State Status – None

Other – CNPS 2

Oval-leaved viburnum is a deciduous shrub found in chaparral, woodland, and lower montane coniferous forest, though it occurs most often in chaparral or yellow-pine forest habitats. The known range extends from the North Coast and Klamath Ranges regions to the North Coast Ranges, Sierra Nevada Foothills, and San Francisco Bay Area regions of the California Floristic Province. This species blooms from May to June. The nearest CNDDDB occurrence is from 1987 and is approximately 5.5 miles southeast of the project site. The biological surveys were conducted within the evident and identifiable period for oval-leaved viburnum. Oval-leaved viburnum was not observed during the biological surveys. Oval-leaved viburnum does not occur within the project site.

#### 4.2.4-2 SPECIAL STATUS AMPHIBIANS AND REPTILES

Several special status amphibians and reptiles occur or have the potential to occur on the Circle S Ranch either seasonally or year round (**Table 4.2-3**). These animal species are discussed briefly below. One special status reptile and one special status amphibian have been found on the project site: western pond turtle and foothill yellow-legged frog.

**California red-legged frog (*Rana aurora draytonii*)**

Federal Status – Threatened

State Status – California Species of Concern

Other – None

California red-legged frog (CRLF) occurs from Baja California, Mexico, north to the vicinity of Redding and inland at least to Point Reyes, California, along the coast (Jennings and Hayes, 1994). Traditionally a wide intergrade zone was thought to exist, spanning most of Sonoma, Mendocino and Humboldt counties, between the CRLF and the northern red-legged frog (*Rana aurora aurora*). The northern red-legged frog is a state Species of Special Concern and has federal status as a threatened species. A recent study by Shaffer

et al. (2004) found that the intergrade zone is narrower than previously thought. The study proposed that the intergrade zone is located near Point Arena in Mendocino County, north of the project site. Their research suggests that it is unlikely that northern red-legged frogs could occur as far south as the proposed project. Therefore, any red-legged frogs encountered in the vicinity of the proposed project should be considered the Federal threatened CRLF, unless proven otherwise through genetic analyses.

CRLF is primarily an aquatic species, though it may use some upland habitat during the non-breeding season. Aquatic habitat consists of low-gradient freshwater bodies, including ponds, marshes, lagoons, seeps, springs, and backwaters within streams and creeks. While CRLF can occur in either ephemeral or perennial streams or ponds, populations generally cannot be maintained in ephemeral streams in which surface water disappears before metamorphosis (July to September) during most years. Adults seek waters with dense shoreline vegetation such as willows (*Salix* spp.) and cattails (*Typha* spp.). During the non-breeding season, frogs may use upland habitat that provides shade, moisture, and cooler temperatures, such as spaces under boulders and organic debris. CRLF may use these upland habitats up to approximately 200 feet from suitable aquatic habitat (USFWS, 2002 and USFWS, 2006).

CRLF typically lay eggs between December and early April. Eggs are attached to vegetation in shallow water. Tadpoles develop into terrestrial frogs between July and September. Breeding ponds must retain water until this time. CRLF may remain active throughout the year along the coast. In drier inland areas they aestivate in upland habitat from late summer to early winter (USFWS, 2002 and USFWS, 2006).

USFWS designated eight recovery units in the "Recovery Plan for the California Red-legged Frog (*Rana aurora draytonii*)" (USFWS, 2002). Critical habitat for the CRLF occurs approximately three miles northeast of the project site. This critical habitat unit for the CRLF is named NAP-1 by the USFWS and is comprised of 2,529 acres. This unit is located in Napa County and Highway 128 runs through the middle of it. The majority of the unit is on the east side of Highway 121. Private land makes up the entirety of this CRLF critical habitat unit (USFWS, 2002).

The nearest recovery core area to the project site for the CRLF is approximately three miles to the northeast. This recovery core area includes Lake Berryessa and its tributaries (USFWS, 2006). Milliken Creek, which is the main water feature that runs through the project site is not a tributary to Lake Berryessa.

As recorded by CNDDDB, there are two presumed extant occurrences of CRLF within five miles of the project site. The nearest reported occurrence of CRLF to the project site is 2.62 miles northeast of the project site on a tributary to Oak Moss Creek, within the Capell Valley quadrangle. CRLF were observed in ponds at this location in 2003. Oak Moss Creek does not have any direct connectivity to Milliken Creek or its tributaries, as these creeks are separated by a series of topographic ridges and are in different watersheds. Another CRLF record occurs approximately 4.25 miles east of the project site, within Wragg Creek in the Capell Valley quadrangle. CRLF were observed in creek habitat running through oak woodland and non-native grassland in 1983. Wragg Creek also does not have any direct connectivity to Milliken Creek or its tributaries, as these two creeks are also separated by a series of topographic ridges and are in different watersheds.

A complete habitat site assessment for the CRLF on the project site is included in **Appendix F**. Several aquatic features within the project site have the potential to support CRLF breeding and/or dispersal habitat. Milliken Creek and some of its tributaries provide potential dispersal habitat and several pools within Milliken Creek provide breeding habitat. A reservoir in the northwestern corner of the project site, and two ponds, one near the main project site access road and one east of Atlas Peak Road, also provide potential breeding habitat. Two emergent wetlands and a seasonal wetland provide potential dispersal habitat for the CRLF.

Protocol-level surveys were conducted for CRLF on the Circle S Ranch project site and a technical report summarizing the findings of the surveys is complete (**Appendix F**). No individuals of this species were observed on Circle S Ranch. The technical report will be submitted to the USFWS upon completion (discussed in **Impact** and **Mitigation Measure 4.2-10**).

#### **Foothill Yellow-legged Frog (*Rana boylei*)**

Federal Status – None

State Status – California Species of Concern

Other – None

The foothill yellow-legged frog (FYLF) ranges from Oregon south through the Coast Ranges to the Transverse Mountains in Los Angeles County, California, and through the western slope of the Sierra Nevada from Oregon south to Kern County, California. The majority of healthy populations in California are in the coastal counties of northern California (CDFG 2005; NatureServe 2007).

This species requires shallow, flowing water and appears to prefer small- to moderate-sized streams that have at least some cobble-sized substrate. Egg-laying occurs between late March and early June, after the high flows of winter and spring (Jennings and Hayes, 1994).



FYLF are active year-round in warmer locations, and may hibernate in colder areas. Unlike the CLRF, the foothill yellow-legged frog is rarely found far from permanent water. It spends most of its time in or near streams year-round. Tadpoles require water for at least three or four months before developing into terrestrial frogs. During periods of inactivity, FYLF seek cover under rocks in streams or within a few meters of water. Significant migrations or other seasonal movements from breeding areas have not been reported (CDFG, 2002).

Habitat for FYLF occurs along Milliken Creek on the Circle S Ranch. Searches for FYLF were conducted concurrent with the protocol-level CRLF surveys; one FYLF was observed in Milliken Creek in the southeastern corner of the Circle S Ranch project site, north of proposed Block 29 (discussed in **Impact and Mitigation Measure 4.2-10; Appendix F**). FYLF were also observed in Milliken Creek on a neighboring property with a pending Erosion Control Plan application (Walt Ranch; P07-00800-ECPA) approximately one mile from the proposed project.

#### **Western pond turtle (*Clemmys (=Emmys) marmorata*) and subspecies**

Federal Status – None

State Status – California Species of Concern

Other – None

The western pond turtle (*Clemmys marmorata*) occurs throughout California. Suitable habitat consists of any permanent or nearly permanent water body or stream with suitable refuges, basking sites, and nesting sites. Refuge sites can be submerged logs or rocks or mats of floating vegetation. Basking sites can be partially submerged rocks or logs, as well as shallow-sloping banks with little or no cover. This species constructs nests in sandy banks if present, or in soils up to 100 meters away from aquatic habitat as at least ten centimeters deep. Nesting has been reported to occur up to 402 meters (1,391 feet) from water (Jennings and Hayes, 1994), but is usually closer, averaging 28 meters (92 feet) from aquatic habitat (Rathbun et al., 2002). Nests must have relatively high humidity in order for the hatchlings to avoid desiccation. Nesting in upland habitats takes place on hard, compact soils, in open, sunny areas with little vegetation cover (Rathbun et al., 1992; Rathbun et al., 2002). This species eats a variety of organisms, including aquatic plants, beetles, fish, and frogs (CDFG, 2005).

The northwestern pond turtle (*Clemmys marmorata marmorata*) is one of two subspecies of the western pond turtle. This subspecies occurs from Washington state south to the Central Valley of California. It is found in Pacific-slope drainages to an elevation of approximately 4,700 feet. This subspecies generally leaves the aquatic site only to reproduce and to hibernate. Hibernation typically takes place from October or November to March or April.

Egg-laying typically occurs in May and June (Jennings and Hayes, 1994; CDFG, 2002; Stebbins, 2003).

The northwestern pond turtle intergrades with the southwestern pond turtle (*Clemmys marmorata pallida*) in California's Central Valley and San Francisco Bay Area (NatureServe, 2007). It differs from the northwestern pond turtle both in geographical range and in physical characteristics (poorly developed inguinal scutes and color of the throat (NatureServe, 2007). Both subspecies are considered California Species of Concern.

The nearest reports of the northwestern pond turtle to the project site have been near Soda Creek (within four miles of the site), a pond south of Capell Creek (less than one mile to the northeast), and near Sarco Creek (southeast within four miles). The western pond turtle (subspecies not specified) was observed on the project site at the reservoir in the northwestern part of the site, at the pond east of the ranch buildings, and in five locations along Milliken Creek (Winfield, 2006). Different sizes were observed, indicating a breeding population. Given the proximity of the northwestern subspecies to the project site, it is probable that the individuals observed on the project site were the northwestern subspecies. AES biologists also observed northwestern pond turtles in the same locations onsite in 2008 (discussed in **Impact** and **Mitigation Measure 4.2-13**).

#### 4.2.4-3 SPECIAL STATUS AND FORMERLY LISTED BIRDS

Cooper's hawk (*Accipiter cooperi*) is discussed in Windfield's report (2006) as a California Species of Concern, but the species has subsequently been delisted. The olive-sided flycatcher is the only special status animal species that has been observed onsite to-date (though it is not on the targeted list of special status species). Animal species from **Table 4.2-3** are discussed briefly below.

##### **Cooper's Hawk (*Accipiter cooperii*)**

Federal Status – none

State Status – none

Other – none

The Cooper's hawk is discussed in Windfield's report (2006) as a California Species of Concern, but the species has subsequently been delisted (Shuford and Gardali, 2008). The Cooper's hawk is adapted for hunting prey in flight through woodland. Small birds make up the majority of its diet and an assortment of small mammals, reptiles and amphibians make up the balance. Prey is often chased in flight through dense forests or run down in dense thickets. The Cooper's hawk is rarely found outside of patchy to dense woodland habitat. They are most frequently found near dense stands of live oak, riparian deciduous or other forest habitats near water. Nesting usually occurs near streams in second-growth conifer

stands or deciduous riparian areas. Breeding takes place March through August. With an elevation range from sea level to 2,700 meters above mean sea level, this species occurs throughout California (CWHR, 2002). A Cooper's hawk was observed flying in the northern portion of the property.

**Tricolored blackbird (*Agelaius tricolor*)**

Federal Status – Bird of Conservation Concern

State Status – California Species of Concern

Other – none

This species is predominantly found in the Central and San Joaquin Valley and in coastal counties south of Sonoma County. Populations also documented from the Peninsular Range near San Diego county and extreme northern California. It eats insects and seeds, particularly from grain crops. Suitable foraging habitat consists of grassland, flooded fields, and on the edges of ponds where emergent vegetation is present (e.g. cattails or tules [*Scirpus* spp.]). This species usually nests in large flocks (at least 50 breeding pairs) in dense vegetation near fresh water or by emergent wetlands. Nesting sites are typically associated with cattails, tules, willows, blackberry, and wild rose. Nesting occurs from April to July (CDFG 2005). Recorded observations in Napa County have centered on Pope Valley, approximately 12 miles north of the project site, and Cuttings Wharf, approximately 11 miles south of the site.

**Golden eagle (*Aquila chrysaetos*)**

Federal Status – Bird of Conservation Concern

State Status – California Species of Concern; California Fully Protected Species

Other – none

This species is a year-round resident in most of California, wintering in the Central Valley and in the Colorado Desert. In general, they occur in rolling foothills, montane regions, sage-juniper flats, and deserts from zero to 3,833 meters above seal level. Suitable foraging habitat is open grassland, desert or savannah, and occasionally early successional stages of forest or shrub habitats. Common prey includes lagomorphs (e.g. rabbits and hares) and rodents, but they will also eat other mammals, birds, and reptiles of similar size. Roosting habitat consists of cliffs and large trees, while nesting habitat consists of cliffs and large trees in open areas. Due to its preference for nesting in cliffs, this species is generally found nesting in canyons and other similar topographic features. Breeding season starts in late January and peaks in March. Eggs are laid February to mid-May, with nesting season continuing through August. The nearest recorded occurrence is on the largest island of Lake Berryessa, approximately 12 miles from the project site.

**Long-eared owl (*Asio otus*)**

Federal Status – None

State Status – California Species of Concern

Other – None

Breeding and roosting sites require dense stands of trees adjacent to open country. These areas allow vantage points to hunt small mammals, particularly rodents. Common breeding areas include riparian bottomlands grown to tall willows & cottonwoods, and belts of live oak paralleling stream courses. Dense stands of tamarisk, orchards, and trees planted as windbreaks also may be used. Abandoned nests of hawks, crows and magpies are used as nest sites. Breeding occurs between February and July. There are no CNDDDB records in Napa or adjacent counties for this species.

**Western burrowing owl (*Athene cunicularia hypugaea*)**

Federal Status – None

State Status – California Species of Concern

Other – None

Burrowing owls occur in open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports, nesting and roosting in burrows dug by mammals. They are found in suitable habitats throughout California. Burrowing owls spend much time on the ground or on low perches such as fence posts or dirt mounds in search of prey that consists of insects, small mammals, birds, and carrion. Nesting is often in abandoned burrows (e.g., prairie dog, ground squirrel, fox, woodchuck, and tortoise) and can be identified by the lining of feathers, pellets, debris, and grass. This species maintains a circadian rhythm and hunts day or night. They often take cover during the warmest part of the day. A single poor quality occurrence was recorded in Napa County, close to the airport and about 15 miles south of the site. The closest sighting known to AES personnel is in Rector Canyon, about five miles west of the project site (personal communication, Stephen Stringer, 2007).

**Northern harrier (*Circus cyaneus*)**

Federal Status – None

State Status – California Species of Concern

Other – None

The northern harrier is most common in coastal salt & fresh-water marsh. It nests & forages in grasslands, from salt grass in desert sink to mountain cienegas. Nests are built on the ground in shrubby vegetation, usually at marsh edge. The nearest extant record for this species is approximately 12 miles south of the project site at Coon Island.

**Olive-sided flycatcher (*Contopus cooperi*)**

Federal Status – None

State Status – Species of Concern

Other – None

The olive-sided flycatcher (*Contopus cooperi*) is one of the larger flycatchers found in California. They are a stout short tailed bird with a short tail and dark olive-gray-brown back. White tufts behind the folded wings can be a key to identification. The olive-sided flycatcher is more predominantly found throughout Canada and up to Alaska, yet their range drops down into the Coastal California, Sierra Nevada and Rocky Mountains. Their breeding habitat is specific to montane and coniferous forests at mid to high elevations where they typically nest within conifers or in cavities of dead or felled trees. In Napa County they prefer Douglas Firs and in the Bay area tend to breed in eucalyptus groves (Berner, et al., 2003). They are a summer resident and migrant from April through October and breed in California from May through August while they are most commonly found to occur at elevations ranging from 3,000 to 7,000 feet above msl. In Napa County they are typically seen after April 20 and regularly detected through the first half of May (Berner, et al., 2003). They are passive foragers that remained perched near the edges of large openings or clearings until enticed to engage large flying insects such as bees, dragonflies, and grasshoppers. They have a naturally low reproductive rate. In California their densities are low and their populations are potentially threatened by historic logging practices and fire suppression activities which have functionally reduced the preferred fringe foraging and snag habitats that they prefer. In general, they are more common in the southern and western localities of Napa County. Three individual olive-sided flycatchers were observed onsite near the existing reservoir and south of the southern boundary of proposed Block 6B.

**Yellow warbler (*Dendroica petechia*)**

Federal Status – None

State Status – Species of Concern

Other – None

The yellow warbler is a strikingly yellow bird, with chestnut streaking that shows most prominently in adult males. It breeds primarily in wet, deciduous thickets, especially willow (*Salix* spp.) thickets. In California, such thickets primarily occur in riparian woodlands. To a lesser extent, the yellow warbler also breeds in dry montane chaparral with scattered trees and abundant *Ceanothus* and manzanita. The bird's breeding range in California extends across nearly all of northern California except the Sacramento Valley; and south along the Sierra Nevada Range and the Central and South Coast Ranges. It is an uncommon to very rare breeder in the Sacramento and San Joaquin Valleys. Breeding season extends from May to August. Yellow warblers migrate south from California for the winter, with only a very few overwintering in various counties of southern California (CDFG, 2005). There are no

occurrences recorded in the CNDDDB for this species in Napa County. However, Berner et al. (2003) have documented several sites within Napa County where this species has been observed nesting. Good nesting habitat with nesting birds has been observed in Conn Valley and Chiles Valley. Berner et al. (2003) states that the habitat at many locations is restricted to isolated patches of willows, including the feeder streams of Lake Hennessey, Dry Creek Canyon and Napa Creek in the City of Napa. All of these sites are within approximately seven miles of the project site. Nesting habitat on the Circle S Ranch is marginal and this species is unlikely to occur on site.

**White-tailed kite (*Elanus leucurus*)**

Federal Status – None

State Status – California Fully Protected

Other – None

White-tailed kites are yearlong residents in coastal and valley lowlands. They inhabit herbaceous and open stages of most habitats and can often be found in agricultural areas. Foraging occurs in open grasslands, meadows, farmland, and emergent wetlands. Prey includes small mammals, small bird species, voles, amphibians, reptiles, and insects. Nesting takes place from February to October with a peak season ranging from May to August. Nests are placed near the top of (usually 20 to 100 feet above ground) dense canopy trees in isolated stands of oaks, willow, or other deciduous trees next to suitable foraging habitat. A combination of suitable foraging habitat and adjacent suitable nesting habitat is essential for this species. There are three CNDDDB records in Napa County: in the Napa River Ecological Reserve, due west of the site about four miles, south of Rector Canyon, approximately three miles northwest of the project site, and near Haystack Mountain, about two miles southwest of the project site.

**Merlin (*Falco Columbarius*)**

Federal Status – none

State Status – Species of Concern

Other – None

The merlin is a small falcon that breed throughout the northern forests and prairies of North America. The species is a migrant and winter visitor to California. There are no breeding records for the state. The species prefers open to semi-forested habitats and is commonly seen in rural areas and cities. The merlin primarily feeds on small to medium sized birds. The merlin is common in the California's Central Valley and central and northern coasts. The merlin is not expected in the project site.

**Prairie falcon (*Falco mexicanus*)**

Federal Status – None

State Status – Species of Concern

Other – USFWS Bird of Conservation Concern

This species is a migrant that ranges from southeastern deserts northwest along the inner Coast Ranges and Sierra Nevada. Habitats include anything from annual grasslands to alpine meadows, but this bird is associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas. Nest sites include cliffs, bluffs, and discarded eagle or crow nests in large trees. Suitable habitat exists for this species on the project site. Most of the CNDDDB records for this species have been classified as 'sensitive' and give no specific locality information. There are two occurrences in Napa County, one near the Napa/Yolo county line northeast of Lake Berryessa and the other in the Walter Springs quad area.

**Bald eagle (*Haliaeetus leucocephalus*) (Wintering and Nesting)**

Federal Status – Delisted

State Status – Endangered

Other – None

On August 8, 2007, the bald eagle was removed from the federal list of threatened and endangered species. In the Pacific Recovery Region, which includes California, habitat conservation efforts, including laws and management practices at federal, state and community levels have helped facilitate bald eagle population increases. Critical habitat for bald eagle was not designated as part of the Pacific Recovery Plan (USFWS, 1986).

Even though they are delisted, bald eagles are still protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. These Acts require some measures to continue to prevent bald eagle "take" resulting from human activities. The three actions described below pertain to implementation of the Bald and Golden Eagle Protection Act. 1) The U.S. Fish and Wildlife Service finalized modifications to a regulatory definition of "disturb" under the Bald and Golden Eagle Protection Act (Eagle Act). 2) The Service released the final National Bald Eagle Management Guidelines, which provide guidance to the public on how to prevent impacts to bald eagles that could violate the Eagle Act. 3) On June 5, 2007, the Service opened a 90-day public comment period on a proposal to create a permit program to authorize limited "take" of bald and golden eagles where the "take" is associated with, and not the purpose of, otherwise lawful activities. The comment period closed on September 4, 2007.

Bald eagles typically breed in forested areas, relatively close (usually less than two kilometers) to water that offers foraging opportunities. The bird feeds opportunistically,

feeding on a variety of mammals and birds. It prefers, however, eating fish, and seeks out aquatic habitats for foraging. There are three occurrences of bald eagle in Napa County, all around Lake Hennessey, at least six miles from the Circle S Ranch. Foraging habitat for this species on the project site is marginal at best.

**Yellow-breasted chat (*Icteria virens*)**

Federal Status – None

State Status – Species of Concern

Other – None

Yellow-breasted chat is a large warbler with a distribution that spans from West Coast to East Coast. Within California, yellow-breasted chats breed in the Klamath and North Coast Ranges, Central Valley, and locally through the Peninsular and South Coast Ranges and Sierra Foothills. In arid areas, such as much of the western U.S., the species generally occupies riparian habitat; it may, however, be found in some non-riparian shrubby habitats. Yellow-breasted chats begin arriving on California breeding grounds in April, and generally depart for Mexican and Central American wintering grounds by September (Eckerle and Thompson 2001). There are no CNDDDB records in Napa or adjacent counties. The nearest record is in Solano County about 15 miles from the project site.

**Loggerhead shrike (*Lanius ludovicianus*)**

Federal Status – None

State Status – Species of Concern

Other – USFWS Bird Of Conservation Concern

The loggerhead shrike is a resident and winter visitor in lowlands and foothills throughout California. This species prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. They are a year-round resident and breed from March to August. Nest sites are usually well concealed and can be up to 50 feet above ground. Perches are used to hunt insects, reptiles, and amphibians; although they will hunt small mammals and birds. A unique characteristic of the shrike's hunting technique is the skewering of prey on a sharp object. Loggerhead shrikes are not well documented in the CNDDDB. There are no records for Napa or adjacent counties. The nearest record is in Contra Costa County, near Oakley.

**Osprey (*Pandion haliaetus*)**

Federal Status – None

State Status – Species of Concern

Other – None



In California, osprey nest from the Cascade Range south to Lake Tahoe, and along the coast south to Marin County. Ospreys nest along the ocean shore, bays, and freshwater lakes, and large streams; strictly associated with large, fish-bearing waters, predominantly in ponderosa pine to mixed conifer habitats. Nests are usually located within one-quarter mile of fish-producing waters, but may occur up to a mile away. Nests are generally built in large snags or dead-topped trees in open forest habitats. A neotropical migrant, they arrive at nesting grounds mid-March to April and depart in October (CDFG, 2002). The closest records to the site are in adjacent Sonoma county, within 25 miles of the Circle S Ranch.

#### **Purple martin (*Progne subis*)**

Federal Status – None

State Status – Species of Concern

Other – None

One of the world's most studied birds, the purple martin breeds in North America and winters in South America. It is widely distributed throughout the eastern United States, and patchily distributed throughout the western U.S. In California, the species is locally distributed, with the highest concentration of populations occurring along the western Cascade and Sierra Nevada Ranges; North Coast and northern Central Coast Ranges; and in extreme southwest California. The purple martin is a cavity-nester. In California, it is generally restricted to areas with dead trees containing woodpecker holes. Breeding season extends from April to August (Brown, 1997; Sibley, 2000). Two occurrences have been recorded in Napa County within 20 miles northwest of the project site, one south of Angwin and the second near Calistoga at the north end of Napa Valley.

#### **4.2.4-4 SPECIAL STATUS FISH**

Drainages on the project site do not provide habitat for listed fish species such as steelhead and Chinook salmon, therefore focused surveys for fish were not conducted. The drainages on the project site flow southeastward and into Milliken Reservoir, a water source for the City of Napa. The project site is in the Milliken Reservoir watershed above Milliken Reservoir. The dam presents a barrier to upstream migration of anadromous fish.

#### **4.2.4-5 LISTED INVERTEBRATES**

Habitat for only one invertebrate special status species could potentially occur on the Circle S Ranch, as described below.

**Valley Elderberry Longhorn Beetle** (*Desmocercus californicus dimorphus*)

Longhorn Beetle Family – (Cerambycidae)

Federal Status – Threatened

State Status – None

The valley elderberry longhorn beetle (VELB) is about two centimeters long. This beetle is dimorphic: the forewings of the female are dark metallic green with red margins, whereas those of the male are primarily red with dark green spots. The VELB is associated with elderberry shrubs (*Sambucus* spp.) during its entire life cycle. The adults emerge from pupation inside the wood of these shrubs in the spring as their flowers begin to open. The wood of *Sambucus* can be examined for exit holes made by the emerging adults in the spring. The adults eat the elderberry foliage until about June when they mate. The females lay eggs in crevices in the bark. Upon hatching the larvae then begin to tunnel into the tree where they will spend one to two years eating the interior wood, which is their sole food source. They are found almost exclusively on wood that is one to three inches in diameter, less than three feet above ground, primarily in riparian habitats.

The VELB was listed as threatened under the Federal Endangered Species Act in 1980. Guidelines for conservation are listed on the USFWS website (1999). Agricultural, urban and suburban development, grazing and pesticides are the known threats to this species. The VELB is found only in California's Central Valley, at elevations of 30 to 2,220 feet. The Circle S Ranch is near the western extent of the geographical range for this beetle. The nearest recorded incidence of the VELB to the project site occurs along Putah Creek from Lake Berryessa to Lake Solano and in the Suisan-Fairfield basin, in both cases associated with riparian habitat.

**4.2.4-6 SPECIAL STATUS BATS AND OTHER MAMMALS**

Four special status bat species have the potential to occur on the project site: Townsend's big-eared bat (*Corynorhinus townsendii*), pallid bat (*Antrozus pallidus*), long-eared myotis (*Myotis evotis*), and fringed myotis (*Myotis thysanodes*). The American badger, a special status mammal species, also has the potential to occur on site. These species are briefly discussed below.

**Townsend's Big-eared Bat** (*Corynorhinus townsendii*)

Federal Status – None

State Status – Species of Concern

Other – Western Bat Working Group High Priority

Townsend's big-eared bat is found throughout California in habitats other than alpine and subalpine. This species prefers habitats near water and forages at night on small moths

and beetles. The species is a moth specialist with over 90 percent of its diet composed of Lepidoptera, and often travels large distances while foraging (over 90 miles). Seasonal movement patterns are not well understood and may be localized. Distribution is strongly correlated with availability of caves and cave-like roosting habitat (e.g., abandoned mines, bridges and culverts). However, the species has also been reported roosting in buildings, bridges, rock crevices, and hollow trees. These bats roost during the day and from October to April when hibernating. Maternity colonies are comprised of groups of females and their young, which roost in relatively warm sites in caves, tunnels, mines, and occasionally in abandoned buildings. These colonies form in May or June when the young are born and remain in the roost until August, by which time the young have been weaned and fledged (CDFG, 2005). This species has begun to decline due to loss of roosting habitat, and is extremely sensitive to human disturbance (NatureServe 2006). All of the CNDDDB occurrences in Napa County for this species occur at the northern end, in Angwin, Pope Valley and Knoxville, over 12 miles from the project site.

Based on focused surveys conducted by AES in 2008, it was determined that suitable roosting habitat (e.g., rock crevices and hollow trees) is not abundant within the proposed vineyard blocks. If this species does occur within the area, it would be in very low numbers and likely only passing through the area.

#### **Pallid Bat (*Antrozous pallidus*)**

Federal Status – None

State Status – Species of Concern

Other – Western Bat Working Group High Priority

Pallid bat occurs from British Columbia to Texas south to Baja California and central Mexico (Smithsonian National Museum of Natural History 2007). In California, pallid bat occurs throughout the state except in the high Sierra Nevada Range from Shasta County to Kern County. The pallid bat is most commonly found in dry, open habitats with rocky areas for roosting. Pallid bats roost alone or in small groups (two to 20 bats). This species has three different roosts: the day roost is usually in a warm horizontal opening such as in attics or rock cracks; the night roost is usually in the open, near foliage; and the hibernation roost, which is often in buildings, caves, or cracks in rocks (CDFG 2002). Roosts generally have unobstructed entrances/exits and are high above the ground. The species is an opportunistic feeder and forages primarily over open habitats. Winter habitats are not well understood but the species does not appear to migrate long distances between summer and winter sites. The nearest records of pallid bat near the project site are in the City of Napa (about six miles south) and south of Lake Hennessy (about six miles northwest).

Based on focused surveys conducted by AES in 2008, it was determined that suitable roosting (e.g., basal hollows and exfoliating bark) and foraging habitat (i.e. open spaces) is

not abundant within the proposed vineyard blocks. If this species does occur within the area, it would be in very low numbers and likely only passing through the area.

**Long-eared myotis (*Myotis evotis*)**

Federal Status – Species of Concern

State Status – Species of Concern

Other – Western Bat Working Group High Priority

Long-eared myotis occurs primarily in coniferous forest, but is also known from chaparral, semi-arid shrublands, and agriculture. They are often found foraging in dense vegetation or over small bodies of water. The species is known to roost in buildings, caves, cliff crevices, rocky outcrops, in hollow trees and under loose tree bark. This species is a slow flier and is often described as a hovering gleaner eating food off the ground, rocks, and tree trunks. Long-eared myotis occurs through western North America, from British Columbia south to Baja California. The nearest CNDDDB record for this species near the project site is southwest of Lake Berryessa, about 12 miles north.

Based on focused surveys conducted by AES in 2008, it was determined that because the proposed vineyard block habitat is largely thick vegetation, the blocks provide poor quality long-eared myotis habitat. If this species does occur within the area, it would be in very low numbers and likely only passing through the area.

**Fringed Myotis bat (*Myotis thysanodes*)**

Federal Status – Species of Concern

State Status – None

Other – Western Bat Working Group High Priority

The fringed myotis is widespread in California, occurring in all but the Central Valley and the Colorado and Mojave deserts. Its abundance appears to be irregular, so it may be common locally. It occurs in a wide variety of habitats, with records ranging in elevation from sea level to 9,350 feet in New Mexico. Roosting in decadent trees and snags, particularly large ones, is common throughout its range. They have been documented roosting in a large variety of tree species and it's likely that tree characteristics (e.g., height and decay stage) rather than tree species play a greater role in roost site selection. The fringed myotis has also been documented roosting in caves, mines, buildings, cliff faces, and rock crevices. It feeds on beetles, moths, arachnids, and orthopterans, foraging over water, over open habitats, and by gleaning from foliage. The period of hibernation lasts from October through March. The nearest CNDDDB records are from Lake and Sonoma counties, at least 20 miles from the project site.

Based on focused surveys conducted by AES in 2008, it was determined that because the proposed vineyard block habitat is largely thick shrubby vegetation, the blocks provide poor quality fringed myotis habitat. If this species does occur within the area, it would be in very low numbers and likely only passing through the area.

#### **American Badger (*Taxidea taxus*)**

Federal Status – None

State Status – Species of Special Concern

Other – None

Badgers are solitary, foraging at night and remaining underground during the day. They dig burrows with eight- to 12-inch elliptical (wider than tall) entrances in friable soils for cover, generally with a single entrance. This animal frequently reuses burrows, although some have been known to dig a new den each night, especially in summer. Soil excavated during formation of the den is piled at the entrance. Often when a den is occupied in cold weather, the tunnel is partially plugged. One to five young are born in an extensive burrow system. Mating occurs in late summer or early autumn and the young are born in March or April. Newly born badgers become independent within four to five months. Badgers feed mainly on small mammals, especially ground squirrels, pocket gophers, rats, mice and chipmunks. They also forage on birds, eggs, reptiles, invertebrates, and carrion.

American Badgers occur from northern Alberta, Canada, southward to central Mexico. They range from the Pacific Coast eastward through Ohio. They are absent from the humid coastal forests and from other regions with dense forests. The badger was once fairly widespread throughout the open grassland habitats of California. Badgers are now an uncommon, permanent resident found throughout most of the state, with the exception of the northern North coast area. They are most abundant in the drier open areas of most shrub, forest, and herbaceous habitats with friable soils. Badgers are generally associated with treeless regions, prairies, park lands, and cold desert areas. On the project site, appropriate habitat exists in grassland and low density woodland areas (no more than a few trees per acre). Cultivated lands have been reported to provide little usable habitat for this species. The nearest documented element occurrence (#203) was three miles southwest of the City of Napa, about six miles from the site. Only one other element occurrence (#301) is documented for Napa County in the CNDDDB, but no location data are given. Both occurrences are presumed extant in the CNDDDB.

Badgers are a major predator of ground squirrels and other ground dwelling animals, such as, burrowing owls. Badgers excavate holes to find prey and leave noticeable dirt mounds on the landscape (Eldridge 2004). The grasslands within vineyard blocks and surrounding habitat are relatively small in size, from less than an acre to approximately 30 acres, and are often surrounded by thick chaparral, steep slopes, and/or drainages, making the grasslands

islands of potential badger habitat. Based on focused surveys that were conducted by AES in 2008, no ground squirrels or other burrowing mammals that could serve as suitable prey were observed within the grasslands that serve as potential badger habitat. The proposed vineyard blocks and surrounding habitat are poor quality badger habitat. If badgers used the area it would likely be only as a means to travel somewhere else.

## 4.2.5 REGULATORY FRAMEWORK

### 4.2.5-1 SPECIAL STATUS SPECIES

#### **Federal Endangered Species Act**

The USFWS and NMFS implement the Federal Endangered Species Act (FESA) of 1973 (16 USC Section 1531 *et seq.*). Threatened and endangered species on the federal list (50 CFR Subsection 17.11, 17.12) are protected from “take” (direct or indirect harm), unless a Section 10 Permit is granted to an individual or a Section 7 consultation and a Biological Opinion with incidental take provisions are rendered to a lead federal agency. Pursuant to the requirements of FESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed species may be present in the project area and determine whether the proposed project would have a potentially significant impact upon such species. Under FESA, habitat loss is considered to be an impact to the species. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under FESA or result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC Section 1536 (3), (4)). Therefore, project-related impacts to these species, or their habitats, would be considered significant and require mitigation. The USFWS also designates species of concern. Species of concern receive attention from federal agencies during environmental review, although they are not otherwise protected under FESA. Project-related impacts to such species would also be considered significant and require mitigation.

#### **California Endangered Species Act**

The CDFG implements state regulations pertaining to fish and wildlife and their habitat. The California Endangered Species Act (CESA) of 1970 (California Fish and Game (CFG) Code Section 2050 *et seq.*, and CCR Title 14, Subsection 670.2, 670.51) prohibits the take (interpreted to mean the direct killing of a species) of species listed under CESA (14 CCR Subsection 670.2, 670.5). A CESA permit must be obtained if a proposed project would result in the take of listed species, either during construction or over the life of the project. Under CESA, CDFG is responsible for maintaining a list of threatened and endangered species designated under state law (California Fish and Game Code 2070). The CDFG also

maintains lists of species of special concern, which serve as “watch lists.” Pursuant to requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state listed species may be present in the project area and determine whether the proposed project would have a potentially significant impact upon such species. Project-related impacts to species on the CESA list would be considered significant and require mitigation.

### **California Environmental Quality Act (CEQA) Guidelines Section 15380**

Although threatened and endangered species are protected by specific federal and state statutes, CEQA *Guidelines* Section 15380(b) and (d) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definition of FESA and the section of the CFG Code dealing with rare or endangered plants or animals. This section was included in the guidelines primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on, for example, a candidate species that has not yet been listed by either the USFWS or CDFG. Thus, CEQA provides the ability to protect a species from potential impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

### **Other**

#### *Birds*

Most bird species, especially those that are breeding, migrating, or of limited distribution, are protected under federal and state regulations. Under the Migratory Bird Treaty Act of 1918 (16 USC Subsection 703-712), migratory bird species and their nests and eggs are protected from injury or death. Project-related disturbances must be reduced or eliminated during the nesting cycle. CFG Code Subsections 3503, 3503.5, and 3800 prohibit the possession, incidental take, or needless destruction of birds, their nests, and eggs. CFG Code Section 3511 list birds that are “fully protected”, which identifies those species that may not be taken or possessed except under specific permit.

#### *Plants*

The California Native Plant Protection (CNPP) Act of 1977 (CFG Code Section 1900 *et seq.*) requires CDFG to establish criteria for determining if a species or variety of native plant is endangered or rare. The CNPS inventories the native flora of California and ranks species according to rarity (CNPS 2005); plants on Lists 1A, 1B, and 2 are considered special status species. List 1 plants are presumed extinct in California, List 1B plants rare or endangered in California and elsewhere, and List 2 plants rare or endangered in California, but more common elsewhere.

### *Oak Woodlands Conservation Act*

The Oak Woodlands Conservation Act (California State Senate Bill 1334) became law on January 1, 2005 and was added to the CEQA statutes as 21083.4. This act requires that a county must determine whether or not a project would result in a significant impact on oak woodlands. If it is determined that a project may result in a significant impact on oak woodlands, then one or more of the following mitigation measures are required:

1. Conserve oak woodlands through the use of conservation easements;
2. Plant an appropriate number of trees, including maintenance of plantings and replacement of failed plantings;
3. Contribute funds to the Oak Woodlands Conservation Fund for the purpose of purchasing oak woodlands conservation easements; and
4. Other mitigation measures developed by the county.

The conversion of oak woodlands on agricultural land used to produce or process plant and animal products for commercial purposes is exempt from mitigation.

### *4.2.5-2 WETLANDS AND OTHER WATERS OF THE U.S.*

Any project that involves working in navigable waters of the United States (U.S.), including the discharge of dredged or fill material, must first obtain authorization from the United States Army Corps of Engineers (USACE), under Section 404 of the Clean Water Act. The CDFG requires notification prior to commencement, and possibly a Lake or Streambed Alteration Agreement pursuant to CDFG Code Subsection 1601-1616, 5650, if a proposed project would result in the alteration or degradation of a stream, river, or lake in California. The Regional Water Quality Control Board may require State Water Quality Certification (Clean Water Act Section 401 permit) before other permits are issued, which may involve implementation of a storm water pollution prevention plan.

### *4.2.5-3 LOCAL REGULATIONS, GOALS AND POLICIES*

#### **Napa County General Plan**

Natural resource use in Napa County is regulated by the Napa County General Plan (Napa County, 2008). Below are relevant goals and policies from the General Plan pertaining to wetlands and biological resources in the project area:

#### Open Space Conservation Policies

Policy CON-1: The County will preserve land for greenbelts, forest, recreation, flood control, adequate water supply, air quality improvement, habitat for fish, wildlife and wildlife



movement, native vegetation, and natural beauty. The County will encourage management of these areas in ways that promote wildlife habitat renewal, diversification, and protection.

Policy CON-2: The County shall identify, improve, and conserve Napa County's agricultural land by:

Requiring existing significant vegetation be retained and incorporated into agricultural projects to reduce soil erosion and to retain wildlife habitat. When retention is found to be infeasible, replanting of native or non-invasive vegetation shall be required, and

Minimizing pesticide and herbicide use and encourage research and use of Integrated pest control methods such as cultural practices, biological control, host resistance, and other factors.

#### Natural Resource Goals and Policies

Goal CON 2: Maintain and enhance the existing level of biodiversity.

Goal CON-3: Protect the continued presence of special-status species, including special-status plants, special-status wildlife, and their habitats, and comply with all applicable state, federal, or local laws or regulations.

Goal CON-4: Conserve, protect, and improve plant, wildlife, and fishery habitats for all native species in Napa County.

Goal CON-5: Protect connectivity and continuous habitat areas for wildlife movement.

Policy CON-10: The County shall conserve and improve fisheries and wildlife habitat in cooperation with governmental agencies, private associations and individuals in Napa County.

Policy CON-11: The County shall maintain and improve fisheries habitat through a variety of appropriate measures, including:

- m) Control sediment production from mines, roads, development projects, agricultural activities, and other potential sediment sources.
- n) Implement road construction and maintenance practices to minimize bank failure and sediment delivery to streams.

Policy CON-13: The County shall require that all discretionary residential, commercial, industrial, recreational, agricultural, and water development projects consider and address impacts to wildlife habitat and avoid impacts to fisheries and habitat supporting special-status species to the extent feasible. Where impacts to wildlife and special-status species cannot be avoided, projects shall include effective mitigation measures and management plans including provisions to:

- a) Maintain the following essentials for fish and wildlife resources:
  - 3) Adequate amounts of feeding, escape, and nesting habitat.
  - 4) Proper temperature through maintenance and enhancement of streamside vegetation, volume of flows, and velocity of water.
- c) Employ supplemental planting and maintenance of grasses, shrubs and trees of like quality and quantity to provide adequate vegetation cover to enhance water quality, minimize sedimentation and soil transport, and provide adequate shelter and food for wildlife and special-status species and maintain the watersheds, especially stream side areas, in good condition.
- d) Provide protection for habitat supporting special-status species through buffering or other means.
- e) Provide replacement habitat of like quantity and quality on- or off-site for special status species to mitigate impacts to special-status species.
- f) Enhance existing habitat values, particularly for special-status species, through restoration and replanting of native plant species as part of discretionary permit review and approval.
- g) Require temporary or permanent buffers of adequate size (based on the requirements of the subject special-status species) to avoid nest abandonment by birds and raptors associated with construction and site development activities.

Policy CON-14: To offset possible losses of fishery and riparian habitat due to discretionary development projects, developers shall be responsible for mitigation when avoidance of impacts is determined to be infeasible. Such mitigation measures may include providing and permanently maintaining similar quality and quantity habitat within Napa County, enhancing existing riparian habitat, or paying in-kind funds to an approved fishery and riparian habitat improvement and acquisition fund. Replacement habitat may occur either on- site or at approved off-site locations, but preference shall be given to on-site replacement.

Policy CON-16: The County shall require a biological resources evaluation for discretionary projects in areas identified to contain or potentially contain special-status species based upon data provided in the Baseline Data Report (BDR), California Natural Diversity Database (CNDDDB), or other technical materials. This evaluation shall be conducted prior to the approval of any earthmoving activities. The County shall also encourage the

development of programs to protect special-status species and disseminate updated information to state and federal resource agencies.

Policy CON-17: Preserve and protect native grasslands, serpentine grasslands, mixed serpentine chaparral, and other sensitive biotic communities and habitats of limited distribution. The County, in its discretion, shall require mitigation that results in the following standards:

- a) Prevent removal or disturbance of sensitive natural plant communities that contain special-status plant species or provide critical habitat to special-status animal species.
- b) In other areas, avoid disturbances to or removal of sensitive natural plant communities and mitigate potentially significant impacts where avoidance is infeasible.
- c) Promote protection from overgrazing and other destructive activities.
- d) Encourage scientific study and require monitoring and active management where biotic communities and habitats of limited distribution or sensitive natural plant communities are threatened by the spread of invasive non-native species.
- e) Require no net loss of sensitive biotic communities and habitats of limited distribution through avoidance, restoration, or replacement where feasible. Where avoidance, restoration, or replacement is not feasible, preserve like habitat at a 2:1 ratio or greater within Napa County to avoid significant cumulative loss of valuable habitats.

Policy CON-18: To reduce impacts on habitat conservation and connectivity:

- a) In sensitive domestic water supply drainages where new development is required to retain between 40 and 60 percent of the existing (as of June 16, 1993) vegetation onsite, the vegetation selected for retention should be in areas designed to maximize habitat value and connectivity.
- c) Preservation of habitat and connectivity of adequate size, quality, and configuration to support special-status species should be required within the project area. The size of habitat and connectivity to be preserved shall be determined based on the specific needs of the species.
- d) The County shall require discretionary projects to retain movement corridors of adequate size and habitat quality to allow for continued wildlife use based on the needs of the species occupying the habitat.
- e) The County shall require new vineyard development to be designed to minimize the reduction of wildlife movement to the maximum extent feasible. In the event the County concludes that such development will have a significant impact on wildlife movement, the County may require the applicant to relocate or remove existing perimeter fencing installed on or after February 16, 2007 to offset the impact caused by the new vineyard development.

h) Support public acquisition, conservation easements, in-lieu fees where on-site mitigation is infeasible, and/or other measures to ensure long-term protection of wildlife movement areas.

Policy CON-19: The County shall encourage the preservation of critical habitat areas and habitat connectivity through the use of conservation easements or other methods as well as through continued implementation of the Napa County Conservation Regulations associated with vegetation retention and setbacks from waterways.

Policy CON-22: The County shall encourage the protection and enhancement of natural habitats which provide ecological and other scientific purposes. As areas are identified, they should be delineated on environmental constraints maps so that appropriate steps can be taken to appropriately manage and protect them.

Policy CON-26: Consistent with Napa County's Conservation Regulations, natural vegetation retention areas along perennial and intermittent streams shall vary in width with steepness of the terrain, the nature of the undercover, and type of soil. The design and management of natural vegetation areas shall consider habitat and water quality needs, including the needs of native fish and special status species and flood protection where appropriate. Site-specific setbacks shall be established in coordination with Regional Water Quality Control Boards, California Department of Fish and Game, U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration National Marine Fisheries Service, and other coordinating resource agencies that identify essential stream and stream reaches necessary for the health of populations of native fisheries and other sensitive aquatic organisms within the County's watersheds. Where avoidance of impacts to riparian habitat is infeasible along stream reaches, appropriate measures will be undertaken to ensure that protection, restoration, and enhancement activities will occur within these identified stream reaches that support or could support native fisheries and other sensitive aquatic organisms to ensure a no net loss of aquatic habitat functions and values within the county's watersheds.

Policy CON-27: The County shall enforce compliance and continued implementation of the intermittent and perennial stream setback requirements set forth in existing stream setback regulations, provide education and information regarding the importance of stream setbacks and the active management and enhancement/restoration of native vegetation within setbacks, and develop incentives to encourage greater stream setbacks where appropriate. Incentives shall include streamlined permitting for certain vineyard proposals on slopes between 5 and 30 percent and flexibility regarding yard and road setbacks for other proposals.

### Oak Woodlands Goals and Policies

Goal CON-6: Preserve, sustain, and restore forests, woodlands, and commercial timberland for their economic, environmental, recreation, and open space values.

Policy CON-24: Maintain and improve oak woodland habitat to provide for slope stabilization, soil protection, species diversity, and wildlife habitat through appropriate measures including one or more of the following:

- a) Preserve, to the extent feasible, oak trees and other significant vegetation that occur near the heads of drainages or depressions to maintain diversity of vegetation type and wildlife habitat as part of agricultural projects.
- b) Comply with the Oak Woodlands Preservation Act (PRC Section 21083.4) regarding oak woodland preservation to conserve the integrity and diversity of oak woodlands, and retain, to the maximum extent feasible, existing oak woodland and chaparral communities and other significant vegetation as part of residential, commercial, and industrial approvals.
- c) Provide replacement of lost oak woodlands or preservation of like habitat at a 2:1 ratio when retention of existing vegetation is found to be infeasible. Removal of oak species limited in distribution shall be avoided to the maximum extent feasible.
- d) Support hardwood cutting criteria that require retention of adequate stands of oak trees sufficient for wildlife, slope stabilization, soil protection, and soil production be left standing.
- e) Maintain, to the extent feasible, a mixture of oak species which is needed to ensure acorn production. Black, canyon, live, and brewer oaks as well as blue, white, scrub, and live oaks are common associations.
- f) Encourage and support the County Agricultural Commission's enforcement of state and federal regulations concerning Sudden Oak Death and similar future threats to woodlands.

Policy CON-28: To offset possible additional losses of riparian woodland due to discretionary development projects and conversions, developers shall provide and maintain similar quality and quantity of replacement habitat or in-kind funds to an approved riparian woodland habitat improvement and acquisition fund in Napa County. While on-site replacement is preferred where feasible, replacement habitat may be either on-site or off-site as approved by the County.

Policy CON-29: The County shall coordinate its efforts with other agencies and districts such as the Resource Conservation District and share a leading role in developing and providing outreach and education related to stream setbacks and other best management practices that protect and enhance the County's natural resources.

Policy CON-30: All public and private projects shall avoid impacts to wetlands to the extent feasible. If avoidance is not feasible, projects shall mitigate impacts to wetlands consistent with state and federal policies providing for no net loss of wetland function.

#### Water Resources Policies

Policy CON-6: The County shall impose conditions on discretionary projects which limit development in environmentally sensitive areas such as those adjacent to rivers or streamside areas and physically hazardous areas such as floodplains, steep slopes, high fire risk areas and geologically hazardous areas.

Policy CON-41: The County will work to protect Napa County's watersheds and public and private water reservoirs to provide for the following purposes:

- a) Clean drinking water for public health and safety;
- b) Municipal uses, including commercial, industrial and domestic uses;
- c) Support of the eco-systems;
- d) Agricultural water supply;
- e) Recreation and open space; and
- f) Scenic beauty.

Policy CON-42: The County shall work to improve and maintain the vitality and health of its watersheds. Specifically, the County shall:

- d) Support environmentally sustainable agricultural techniques and best management practices (BMPs) that protect surface water and groundwater quality and quantity (e.g., cover crop management, integrated pest management, informed surface water withdrawals and groundwater use).

Policy CON-45: Protect the County's domestic supply drainages through vegetation preservation and protective buffers to ensure clean and reliable drinking water consistent with state regulations and guidelines. Continue implementation of current Conservation Regulations relevant to these areas, such as vegetation retention requirements, consultation with water purveyors/system owners, implementation of erosion controls to minimize water pollution, and prohibition of detrimental recreational uses.

Policy CON-48: Proposed developments shall implement project-specific sediment and erosion control measures (e.g., erosion control plans and/or stormwater pollution prevention plans) that maintain pre-development sediment erosion conditions or at minimum comply with state water quality pollution control (i.e., Basin Plan) requirements and are protective of the County's sensitive domestic supply watersheds. Technical reports and/or erosion control

plans that recommend site-specific erosion control measures shall meet the requirements of the County Code and provide detailed information regarding site specific geologic, soil, and hydrologic conditions and how the proposed measure will function.

## **Napa County Code**

### *Stream Setbacks*

Napa County Code defines streams and provides setbacks for land clearing for agricultural development. Under Section 18.108.030, a “stream” means any of the following:

1. A watercourse designated by a solid line or dash and three dots symbol on the largest scale of the United State Geological Survey maps most recently published, or any replacement to that symbol;
2. Any watercourse which has a well-defined channel with a depth greater than four feet and banks steeper than 3:1 (horizontal to vertical bank ratio) and contains hydrophilic (i.e., water-adapted) vegetation, riparian vegetation or woody vegetation including tree species greater than ten feet in height; or
3. Those watercourses listed in Resolution No. 94-19 and incorporated herein by reference.

Erosion gullies and ravines being repaired with the technical assistance and/or under the direction of the Napa County Resource Conservation District/National Resource Conservation Service, “scour-holes”, and other non-linear features are not considered streams.

Napa County Code 18.108.025 applies setbacks for agricultural development adjacent to streams. Setbacks included in the Code range from 35 to 150 feet measured from the top of bank and increase with the slope of the terrain parallel to the top of bank.

### *Vegetation Preservation and Replacement*

Napa County Code 18.108.100 requires the following conditions when granting a discretionary permit for activities within an erosion hazard area (slopes greater than 5 percent):

- Existing vegetation shall be preserved to the maximum extent consistent with the project. Vegetation shall not be removed if it is identified as being necessary for erosion control in the approved erosion control plan or if necessary for the preservation of threatened or endangered plant or animal habitats as designated by state or federal agencies with jurisdiction and identified on the county’s environmental sensitivity maps.

- Existing trees six inches in diameter or larger, measured at diameter breast height, (DBH), or tree stands of trees six inches DBH or larger located on a site for which either an administrative or discretionary permit is required shall not be removed until the required permits have been approved by the decision-making body and tree removal has been specifically authorized.
- Trees to be retained or designated for retention shall be protected through the use of barricades or other appropriate methods to be placed and maintained at their outboard drip line during the construction phase. Where appropriate, the director may require an applicant to install and maintain construction fencing around the trees to ensure their protection during earthmoving activities.
- Wherever removal of vegetation is necessitated or authorized, the director or designee may require the planting of replacement vegetation of an equivalent kind, quality and quantity.

Napa County Code 18.108.027 requires that as part of any use involving earth-disturbing activity in sensitive domestic water supply drainages, the following vegetation-retention requirements apply:

- A minimum of 60 percent of the tree canopy cover on the parcel or holding existing on June 16, 1993 along with any understory vegetation, and
- When vegetation consists of shrub and brush without tree canopy, a minimum of 40 percent of the shrub, brush and associated annual and perennial herbaceous vegetation.

## 4.2.6 IMPACTS AND MITIGATION MEASURES

### 4.2.6-1 SIGNIFICANCE CRITERIA

A project would have a significant adverse impact on biological resources if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFG or USFWS;
- Have a substantial adverse effect on federal protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal) through direct removal, filling, hydrological interruption, or other means;



- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

#### 4.2.6-2 IMPACTS AND MITIGATION MEASURES

Preserving representative habitats across landscapes preserves habitat connectedness and simultaneously safeguards rare species, habitats, watersheds and biodiversity. Biodiversity provides many ecosystem services that are often not readily visible. It plays a part in regulating the chemistry of our atmosphere and water supply. Biodiversity is directly involved in recycling nutrients and providing fertile soils. Biodiversity is also integral to conservation biology, pertaining to small and declining populations and a variety of factors including habitat change as well as genetic and demographic alterations.

Napa County requires avoidance of targeted resources like special status and locally rare species, Sensitive Biotic Communities, communities of limited distribution and areas of high natural biodiversity to the extent feasible. When avoidance (in whole or in part) is not feasible, Napa County requires replacement of lost oak woodlands or preservation of like habitat at a 2:1 ratio when retention of existing vegetation is found to be infeasible. Removal of oak species limited in distribution shall be avoided to the maximum extent feasible. When impacts cannot be fully mitigated by way of avoidance, then the combination of avoidance, preservation and replacement are intended to be applied to ultimately reduce potentially significant impacts to less than significant levels.

The Circle S Ranch is a mosaic of 22 natural vegetation types, agricultural areas and developed areas on 1,593 acres. The Applicant has proposed to convert to vineyard approximately 459 gross acres, as well as provide for restoration of existing roads and streams and other measures discussed in **Chapter 3.0**, planned in consideration of environmental factors. The impacts and mitigations discussed below provide additional guidance for vineyard development on the project site.

**Impact 4.2-1:** Development of the proposed project would convert to vineyard grassland vegetation and potentially conflict with Napa County Policy CON-17 that preserves and protects native grasslands. Grasslands in general provide cover for erosion control,

important forage and nesting habitat for invertebrates, birds and mammals, and appropriate vegetative structure for many native plant species. This is a potentially significant impact.

There are two types of grasslands on the Circle S Ranch: 1) California Annual Grasslands Alliance; and 2) Upland Annual Grasslands and Forbs Formation. Approximately 41 percent of the California Annual Grasslands Alliance and 35.6 percent of the Upland Annual Grasslands and Forbs Formation onsite are proposed for development to vineyard. Neither of these grasslands are considered Sensitive Biotic Communities because they are not dominated by native grass species that indicate persistent native grassland (native creeping wild rye, purple needlegrass, or one-sided bluegrass). Instead, they are dominated by non-native grassland species (see **Section 4.2**). No special status species have been found in association with these biotic communities onsite.

Although none of the grassland vegetation alliances observed on the project site can be considered sensitive habitats because they lack the characteristic native species as dominants (representing more than about 50 percent of the standing biomass), these grasslands nonetheless provide important habitat for wildlife and plants, and contribute to overall biodiversity in the region.

With the proposed project, greater than 60 percent of the grasslands would be preserved. In addition, canopy openings in oak woodlands provide similar erosion control, forage and nesting habitat for invertebrates, birds (with the exception of some birds that require larger open spaces) and mammals, and appropriate vegetative structure for native plant species as that found in grassland habitats. Not included in the summary calculations for grassland habitat onsite is the herbaceous understory of oak woodland habitat on the property. With mitigation discussed below, approximately 553 acres of oak woodland will be permanently protected (discussed in **Mitigation Measure 4.2-19**). Direct impacts to grasslands are considered less than significant.

Reductions in the quality of the remaining grassland habitat onsite through invasion by nonnative species is a potentially significant impact. In particular, California Annual Grasslands Alliance and Upland Grasses and Forbs Formation (**Figure 4.2-2**) conserved on the property could be improved for native species by light grazing or with a vegetation management plan in select areas to encourage native plant species growth while simultaneously controlling noxious exotic invasive species such as star thistle and medusa-head grass. This would be consistent with Policies CON-1 and CON-17.

Grasslands cover approximately 25 percent of California, but native species typically comprise less than one percent of the standing biomass (Barry et al., 2006). These habitats

are now dominated by exotic grasses and forbs. California Annual Grasslands Alliance is composed of many alien and native annual species, which vary among stands. Upland Annual Grasses and Forbs Formation is similar to California Annual Grasslands but contains more non-native forbs in addition to dominant non-native grasses. On the Circle S Ranch, there were no areas found that were dominated by the native creeping wildrye (*Leymus triticoides*), purple needle grass (*Nasella pulchra*), or one-sided bluegrass (*Poa secunda* ssp. *secunda*), any of which would indicate significant persistent native grasslands. This reflects the 120-year land use history on the site, and is a common scenario across the state.

**Mitigation 4.2-1:** Selected livestock grazing may occur within protected grassland areas and replanted areas for weed management, fire prevention and to reduce competition by weeds within the proposed vineyard blocks when vineyard management deems it necessary and beneficial. When livestock are grazed outside of vineyard areas, temporary fencing shall be utilized to prevent livestock access to vernal pools, wetlands, Milliken Creek and its tributaries. The fencing shall be field verified by Napa County. Circle S Ranch shall consult with Napa County Resource Conservation District to ensure the property is not overgrazed outside the vineyard blocks.

In concert with a grazing management plan invasive plant species that out-compete surrounding vegetation, for example by occurring at densities of over 80 percent, should be controlled to improve grassland quality and biodiversity. As such, and consistent with Policies CON-1 and CON-17, a noxious weed management plan shall be implemented to control infestations of noxious weeds onsite as needed. Such management would reduce noxious weed invasions and improve overall habitat quality and biodiversity. An example of a measurable goal for improving overall quality of grasslands on the site could include, but is not limited to, reducing Medusa-head grass and star thistle (noxious weeds) to less than 15 percent cover (or better). Control of such weeds would have the added benefit of improving overall forage quality for livestock.

Target noxious weeds may be managed by hand-pulling or local application of herbicide with a backpack sprayer. Selective control of noxious weeds like Medusa-head grass, star thistle and others that may invade in the future should be employed using BMPs to minimize soil erosion, water contamination and other non-target herbicide effects. Spraying should be limited to dry days after the rainy season (May or June) but before target weeds are flowering to prevent seed production (May through September), depending on the species. Impact after mitigation is considered less than significant.

**Impact 4.2-2:** Development of the proposed project would convert to vineyard approximately 0.9 acre (4.9 percent) of the almost 19 acres of the Chamise Alliance known to occur within the project site. This is not considered a sensitive habitat type and no known sensitive species occur within this area. Greater than 95 percent of this vegetation type would be preserved within the holding, resulting in less-than-significant impact.

**Mitigation Measure 4.2-2:** No mitigation required.

**Impact 4.2-3:** Development of the proposed project would convert a little less than an acre, 8.4 percent of the 10.5 acres on the project site, of Mixed Manzanita - (Interior Live Oak - California Bay - Chamise) West County NFD Alliance to vineyard. This is not considered a sensitive habitat type. Greater than 91 percent of this vegetation alliance would be preserved within the holding, resulting in less-than-significant impact.

**Mitigation Measure 4.2-3:** No mitigation required.

**Impact 4.2-4:** Development of the proposed project would convert some rock outcrops that may constitute potentially significant resources in several different vegetation types to vineyard, which may conflict with Napa County Goal CON-2 and Policy CON-17. After mitigation, impact would be considered less than significant.

Vineyard development has been known to significantly impact rock outcrop areas, particularly in relatively level terrain. Although the outcrops on the project site are generally less than 0.5 acre in size, they are recognized in Napa County as “potentially significant” because they can provide important habitat features for special status plant and wildlife species. They contribute to the overall biodiversity of the landscape. Growing conditions on rock outcrops are relatively harsh (i.e., greater nutrient and moisture stress than surrounding habitat), and as such, they often harbor higher percentages of native plant species than non-outcrop areas, albeit in sparse overall vegetative cover. These outcrops have been reduced across California due to agricultural and urban development.

Whether or not rock outcrops may be considered sensitive must be judged on a case-by-case basis. Factors used to assess whether a particular rock outcrop is sensitive include the biotic community in which it occurs, whether there are special status species associated with it, the overall diversity of the location and the rarity of that feature in the landscape. No special status species were found in association with the rock outcrops within proposed development areas on slopes less than 30 percent.

None of the steep hillside rock outcrops (on slopes greater than 30 percent) on the project site would be converted to vineyard. However, two types of rock outcrop occur within proposed development areas on slopes less than 30 percent:

- Portions of Blocks 10A and 10B contain a more fractured volcanic outcrop covering approximately four to five acres (**Figure 4.2-2**). The more open areas of this habitat may be classified as Upland Annual Grasslands and Forbs Formation, but parts contain sparse canopy of non-serpentine chaparral shrubs and shrub oaks. There are no unique floristic or habitat features of this fractured volcanic outcrop that distinguish it from the Upland Annual Grasslands and Forbs Formation or the non-serpentine chaparral except that it has fractured rock outcrop on and near the surface of the soil. This area would not be considered sensitive habitat.
- Valley floor habitat in and around Block 2C contains approximately 15 acres of relatively flat volcanic outcrops (**Figure 4.2-2**) embedded in California Annual Grasslands Alliance. For the reasons discussed below, impacts to the outcrops in and around Block 2C would be considered significant.

The flat, valley floor outcrop (in Block 2C) supports an extensive population of an annual outcrop species (Congdon's stonecrop, *Parvisedum congdonii*). Based on herbarium records (Consortium of California Herbaria and the Berkeley Mapper (Hicks 1993)), this metapopulation of Congdon's stonecrop appears to be an outlier, disjunct in the Coastal Range from the western populations in the Sierra Nevada. This annual does not compete with the existing vegetation in the surrounding California Annual Grassland and only occurs on very thin soils on rock outcrops.

This valley floor outcrop is also particularly noteworthy because it contains high plant diversity due, in part, to the juxtaposition of this xeric substrate into generally mesic habitat. It is also of high quality because of its close proximity and connectivity to the (*Carex* spp. - *Juncus* spp. - Wet Meadow Grasses) NFD Super Alliance, seasonal wetlands, and vernal pools on the valley floor (**Figures 4.2-1** and **4.2-2**), which are considered sensitive habitats by Napa County and the CNDDDB (discussed below). Implementation of **Mitigation Measure 4.2-4** (below) would remove this area from the ECPA, reducing direct impacts to this feature to a less-than-significant level.

Furthermore, high quality rock outcrop habitats in valley floors are particularly vulnerable to fertilizers, herbicides and pesticides through sheetflow. Because there is very little percolation through the thin rocky soils, agricultural contaminants can accumulate locally, negatively impact native plant species and increase invasions of non-native species. There is potential for loose soils to be transported to the outcrop during initial grading and earthmoving activities, and agricultural chemicals and sediment to be transported to the

outcrop during subsequent and ongoing vineyard operations as described above. The National Resources Conservation Service (NRCS), USACE, and the University of California–Division of Agricultural and Natural Resources, recommend a minimum 50-foot wide vegetated buffer as a generally adequate buffer width to provide enough vegetation to entrap sediments and soils, and filter chemicals adequately by facilitating degradation within buffer soils and vegetation (USDA, 2000; Grismer et al., 2006). Additionally, the U.S. Environmental Protection Agency (EPA) has indicated that buffer strips of one to 15 meters (three to 50 feet) wide are effective in removing nitrogen and grassland buffer strips of approximately 15 meters (50 feet) wide effectively remove approximately 50 percent of nitrogen in runoff (Mayer et al., 2005). Using BMPs as proposed by the project, such as cover crop management and integrated pest management, in addition to stream, wildlife corridor and western pond turtle setbacks discussed in **Mitigation Measures 4.2-5, 4.2-7 and 4.2-13**, would minimize any impacts.

The potential for loose soils, agricultural chemicals, and nutrients to be transported to the valley floor outcrop is also a potentially significant impact to this feature; implementation of **Mitigation Measure 4.2-4**, which includes minimum 50-foot setbacks from this outcrop (shown on **Figure 4.2-8** from the corridor section below) would effectively filter sediments, agricultural chemicals, and nutrients, reducing indirect impacts to a less-than-significant level.

**Mitigation Measure 4.2-4:** Prior to approval of #P06-01508-ECPA, the plan shall be modified to include the following (any associated project features that become unnecessary as a result of the avoidance, such as proposed roads, shall also be reflected in the revised in the plan):

The extensive rock outcrop on the Foss Valley floor in the southern portion of proposed Block 2C shall be avoided and a buffer of 50 feet around the outcrop shall be maintained throughout construction and operation of the proposed project (**Figure 4.2-2**).

A qualified biologist shall place orange construction fencing along the outer edge of the buffer before earthmoving activities begin, the fencing shall be field verified by Napa County, and the biologist shall return at appropriate intervals during construction to ensure that the fencing and buffer are being maintained. With this mitigation, the proposed project would avoid potential direct, indirect and cumulative impacts to the outcrop in proposed Block 2C. The impacts would be considered less-than-significant.

No mitigation would be necessary for the fractured volcanic outcrop in portions of Blocks 10A and 10B as described above because there are no unique floristic or habitat features of

this fractured volcanic outcrop that distinguish it from the Upland Annual Grasslands and Forbs Formation or the non-serpentine chaparral.

**Impact 4.2-5:** Development of the proposed project could result in impacts to wetlands or waters of the U.S. and may be inconsistent with Policies CON-26, CON-30 and CON-42. This is considered a potentially significant impact. See **Impact** and **Mitigation Measure 4.2-6** for a discussion of impacts to vernal pools.

A delineation of waters of the U.S. was prepared for Circle S Ranch by Winfield and Associates in July, 2005 (**Figure 4.2-2** and **Appendix E**). A copy of the report was submitted to the USACE for verification on July 14, 2005. A Jurisdictional Determination was received September 26, 2005 (File Number 29745N). Milliken Creek is the major drainage through the Foss Valley floor, originating at the northern end of the valley and running south, then east and south again once it crosses beneath Atlas Peak Road. The creek continues to follow the road for some distance before exiting the project site. The drainages on the valley side of the hills all contribute flow to the creek. In some areas, the bedrock is shallow “forcing” the subsurface water flow to the surface, resulting in local ponding and flow in swales.

The jurisdictional features are located along the valley floor (**Figure 4.2-2**), consisting of drainages (tributary waters of the U.S.), seeps, seasonal wetlands and vernal pools/swale (see **Impact** and **Mitigation Measure 4.2-6** for a discussion of impacts to vernal pools). Milliken Creek is included as part of the seasonal wetland surrounding the creek. The areas with standing water, including the vernal pools, were dominated by smooth goldfields, popcorn flower, spikerush, Baltic rush, cow clover, California semaphore grass and monkey flower. Water starwort was also locally dominant. At the upland boundary of the seasonal wetlands, several species of clover were dominant along with California sunflower, cream sacs, buttercup and goldfields. Approximately 4.8 acres of tributary waters of the U.S. occur on the Circle S Ranch. These waters are scattered across the hills surrounding the low areas of the site and contribute to the hydrology of the valley floor. These waters are seasonal and do not contain surface flow during the summer and early fall. The substrate of these waters consists of cobble and gravel and supports plants characteristic of the surrounding upland areas. Tributary waters of the U.S. are those drainages without hydrophytic vegetation. The tributaries receive water from other smaller drainages that are not considered jurisdictional.

Activities associated with stream crossings (rocked and culverted as detailed in **Table 3-3**), stream restoration (bank repair and stone weirs, revegetation), the existing spillway repair, and irrigation pipe crossings would result in direct impacts to waters of the U.S. and will require permits from the USACE and CDFG. With the incorporation of the mitigation

measures listed below and standard BMPs, direct impacts to wetlands and waters of the U.S. would be considered less than significant.

In addition, the potential for loose soils, agricultural chemicals, and nutrients to be transported to wetlands and jurisdictional waters is a potentially significant indirect impact (discussed in **Impact 4.2-4**). Almost all of the proposed vineyard blocks are adjacent to wetlands or streams on the project site. With the project, vineyard development near streams that meet the Napa County definition of a stream maintains minimum 50 foot setbacks (**Figure 4.2-8**), in compliance with the Napa County Conservation Regulations and Code 18.108.30. For drainages which do not meet the Napa County definition of a stream, 20-foot minimum setbacks are maintained (**Figure 4.2-8**). Minimum 50-foot setbacks are maintained around all wetlands, with the exception of proposed Block 2C (see **Impact and Mitigation Measure 4.2-6**). Using Best BMPs as proposed by the project, such as cover crop management and integrated pest management, in addition to the proposed setbacks, would effectively filter sediments, agricultural chemicals, and nutrients to a less-than-significant level (recommended buffer widths are discussed in **Impact 4.2-4**). Potential impacts related to groundwater extraction are discussed in **Chapter 4.6**, Hydrology and Water Quality.

**Mitigation Measure 4.2-5:** Prior to approval of #P06-01508-ECPA, the plan shall be modified to include the following (any associated project features that become unnecessary as a result of the avoidance, such as proposed roads, shall also be reflected in the revised in the plan):

Project site plans shall be modified to avoid or minimize direct impacts to jurisdictional waters of the U.S. A Department of the Army nationwide permit (Section 401 permit) shall be obtained from the USACE prior to the discharge of any dredged or fill material within jurisdictional wetlands and other waters of the U.S. A Streambed Alteration Agreement (SAA) shall be obtained from CDFG prior to construction activities that impact riparian zones. Unavoidable impacts to waters of the U.S. shall be mitigated by creating or restoring waters of the U.S. onsite. Compensatory mitigation shall occur at a minimum of 1:1 ratio and shall be approved by the USACE prior to any discharge into jurisdictional features and by CDFG prior to impacting the riparian zone.

To avoid indirect impacts to waters of the U.S. and wetlands, in addition to **Mitigation Measure 4.2-4**, avoidance buffers of 50 feet shall be established around each of the wetlands. Temporary orange construction fencing shall be installed around wetlands and any drainage features in the vicinity of and outside of the construction area. Fencing shall be located a minimum of 50 feet from the edges of wetlands and stream corridors as identified by a qualified biologist. All fencing shall be installed prior to the commencement of



any earthmoving activities and shall be field verified by Napa County. The fencing shall remain in place until all construction activities in the vicinity have been completed.

Construction activities in the within 50 feet of any USACE jurisdictional features shall be conducted during the dry season to minimize impacts related to erosion, water quality and aquatic resources and activities shall be conducted consistent to **Mitigation Measure 4.2-13** to protect western pond turtle. All disturbed areas shall be seeded and mulched to prevent erosion and sediment deposit into wetlands and waters of the U.S.

Staging areas shall be located away from the areas of wetland habitat that are fenced off. Temporary stockpiling of excavated or imported material shall occur only in approved construction staging areas within the gross acres allocated for vineyard development (i.e., approved vineyard blocks and associated acreage). Excess excavated soil shall be used on site or disposed of at a regional landfill or other appropriate facility. Stockpiles that are to remain on the site through the wet season shall be protected to prevent erosion (e.g. with tarps, silt fences, or straw bales).

Standard precautions shall be employed by the construction contractor to prevent the accidental release of fuel, oil, lubricant, or other hazardous materials associated with construction activities into jurisdictional features. A contaminant program shall be developed and implemented in the event of release of hazardous materials (as detailed in **Mitigation Measure 4.5-1**).

Implementation of **Mitigation Measure 4.2-5** would reduce the impacts to a less-than-significant level and the development and maintenance of this project is consistent with Policies CON-26, CON-30 and CON-42.

**Impact 4.2-6:** Development of the proposed project would convert Northern Vernal Pools and swales, considered sensitive habitat by CDFG and Napa County, to vineyard. This is considered a potentially significant impact. After mitigation, impacts would be considered less than significant.

A small complex of vernal pools and swales are found in and around the southern portion of proposed Block 2C (**Figure 4.2-2**). Proposed vineyard development in and around the southern portion of Block 2C poses a significant negative impact to these vernal features. Direct impacts would be caused by the conversion of some of the vernal pools and swales to vineyard; this is a significant impact. Indirect impacts to vernal pools and swales adjacent to proposed Block 2C could result from potential soil disturbance, runoff of fertilizer, pesticides and other farm-related chemicals, loose soils eroding in, as well as potential reduced water quality from exposed soil erosion (see **Impact 4.2-4**). Vernal pools form

where precipitation and surface runoff become trapped or “perched” above an impermeable or nearly impermeable clay lens of soil. Disturbance of this soil lens as well as added nutrients from runoff can encourage encroachment by woody and exotic species and loss of vernal pool integrity and function (USFWS 2004). Runoff of pesticides and other farm-related chemicals can collect in these depressions and threaten existing native species. As discussed in **Impact 4.2-4**, the proposed minimum 50-foot buffers from wetlands and jurisdictional waters in the vicinity of Block 2C would effectively filter sediments, agricultural chemicals, and nutrients to a less-than-significant level (recommended buffer widths are discussed in **Impact 4.2-4** above).














**Mitigation Measure 4.2-6:** Prior to approval of #P06-01508-ECPA, the plan shall be modified to include the following (any associated project features that become unnecessary as a result of the avoidance, such as proposed roads, shall also be reflected in the revised in the plan):

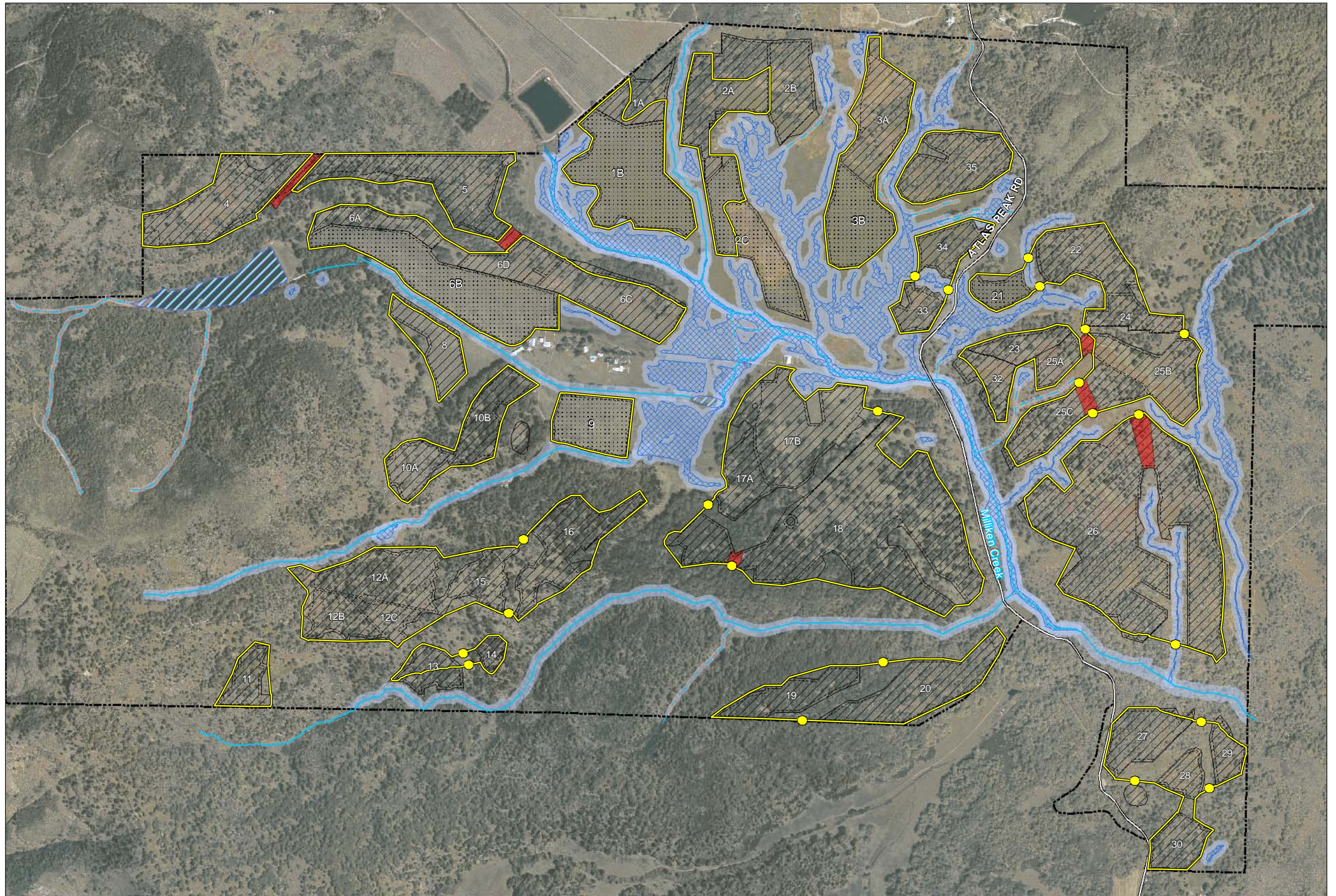
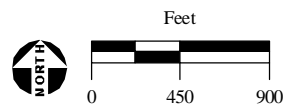
The Applicant shall permanently avoid the Northern Vernal Pools and swales located in and around proposed Block 2C. Construction activities are not anticipated to encroach in this area with the Implementation of **Mitigation Measure 4.2-4**; however, temporary orange construction fencing shall be installed around the features. Fencing shall be located a minimum of 50 feet from the edges of the features as identified by a qualified biologist. All fencing shall be installed prior to the commencement of any earthmoving activities and shall be field verified by Napa County. The fencing shall remain in place until all construction activities in the vicinity have been completed. Implementation of **Mitigation Measure 4.2-6** would reduce the potential impacts to a less-than-significant level.

**Impact 4.2-7:** Development of the proposed project could interfere with existing wildlife movement area corridors and conflict with General Plan Policy CON-18 which relates to wildlife movement. This is considered a potentially significant impact. After mitigation, impact would be considered less than significant.

With the project as proposed, approximately 25 percent of the area within the property would be fenced with wildlife corridors to facilitate movement throughout the property. As proposed, deer fencing would surround clusters of vineyard blocks (**Figure 3-13**). There would be impacts to animal movement as a consequence of the installation of the wildlife exclusion fencing. The proposed stream corridors and buffers between the proposed vineyard blocks on the project site should allow wildlife movement between contiguous habitats within the project parcel and adjacent undeveloped land. Napa County designated stream corridors have been preserved throughout the project site with stream setbacks that range in width from 35 to 50 feet (10.7 to 15.2 meters) on either side of streams (measured from top of bank); as seen in **Figure 4.2-8**, proposed vineyard blocks maintain minimum 50

**LEGEND**

-  Property Boundary
-  Existing Reservoir
-  USGS Bluelines
-  Other Drainages
-  Wetlands
-  50-foot Setback
-  20-foot Setback
-  Wildlife Fencing
-  Critter Culvert
-  Vineyard Removed
- Proposed Vineyard Blocks**
-  Slopes Greater Than 5% and Included in ECPA
-  Slopes Less Than 5% and not Included in ECPA
-  Vineyard Avenues



**Figure 4.2-8**  
Wildlife Corridors

foot wide setbacks from Napa County designated streams. This is equivalent to a minimum wildlife corridor width of 70 to 100 feet (21.4 to 30.4 meters), plus the actual stream width for Napa County designated streams. Drainages not designated as Napa County streams have 20 foot (6.1 meters) minimum corridor widths (**Figure 4.2-8**), as outlined in the ECP (PPI Engineering, 2006). Wildlife corridors that coincide with non-designated streams would have corridor widths of 40 feet (12.2 meters), plus the actual stream width. In addition, the preservation of wetlands and minimum 50 foot buffers around the wetlands, as proposed, provide for a substantial amount of movement area.

The stream corridors on the project site are oriented approximately in a northwesterly to southeasterly direction. The proposed vineyard blocks are largely nestled between the wetland features on the project site, often along this same geographic orientation (**Figure 4.2-2**). Because of this, wildlife movement would be more restricted in some areas in a north-south direction. Wildlife access through Block 26 and continuing through 25B, 25C and 23 would substantially increase the ability for animals to traverse the landscape east of Atlas Peak Road. Connectivity to land to the northwest would be improved with a corridor bisecting Blocks 4 and 5.

**Mitigation Measure 4.2-7:** Prior to approval of #P06-01508-ECPA, the plan shall be modified to include the following (any associated project features that become unnecessary as a result of the avoidance, such as proposed roads, shall also be reflected in the revised in the plan):

To minimize restricted wildlife movement through the proposed placement of wildlife exclusion fencing and vineyard development, the proposed vineyard blocks shall be fenced individually or in small clusters, with corridors of no less than 100 feet in width (discussed in **Section 4.2.2-13**) between fenced areas to permit greater movement through the project site and across Foss Valley (**Figure 4.2-8**). In addition, critter culverts shall be installed at a minimum in the areas designated in **Figure 4.2-8** to provide access through the vineyard blocks. The southern portion of Block 2C should be avoided altogether to avoid sensitive habitats (see **Impact** and **Mitigation Measures 4.2-4** and **4.2-6**). The fencing design would result in the removal of approximately 5.7 acres of proposed vineyard areas from the project, as shown in **Figure 4.2-8**, which includes approximately 4.9 acres of oak woodland. The fencing design shown in **Figure 4.2-8** incorporates reductions in the proposed vineyard block areas to minimize impacts to nesting and overwintering turtle habitat (discussed in **Mitigation Measure 4.2-13**) and impacts to Blue Oak Alliance (discussed in **Mitigation Measure 4.2-19**).

The following fencing design takes into consideration the wildlife that occurs on Circle S Ranch and is recommended to minimize impact on the movement of wildlife across the landscape and maintain consistency with General Plan Policy CON-18:

**Single Vineyard Block Units:**

- 4
- 5
- 8
- 9
- 11
- 26
- 35

**Vineyard Block Clusters:**

- 1A, 1B
- 2A, 2B and 2C (modified to avoid vernal pools, swales and rock outcrop as described in **Impact** and **Mitigation Measures 4.2-4** and **4.2-6**)
- 3A, 3B
- 6A, 6B, 6C, 6D
- 10A, 10B
- 12A, 12B, 12C, 15 and 16
- 13, 14
- 17A, 17B and 18
- 19, 20
- 21, 22, 24, 25B and 25C
- 23, 25A, 32
- 27, 28, 29 and 30
- 33, 34

In addition, streams and drainages with minimum 100 foot corridors (total width) shall be delineated as “Wildlife Movement Corridors” and preserved in perpetuity as open space and wildlife habitat via a deed restriction in a form acceptable to Napa County Counsel. All drainages and immediately adjacent vegetation buffers shall be left unfenced and open to wildlife use and movement. Corridors should be restricted from development and other uses that would degrade the quality of the habitat (including, but not limited to conversion to other land uses such as agriculture or urban development, and excessive off-road vehicle

use that increases erosion) and should be otherwise restricted by the existing goals and policies of Napa County. Standard adaptive management erosion control and fire management practices consistent with state and local regulations shall be observed in these areas as well.

Implementation of **Mitigation Measure 4.2-7**, combined with the remaining acres on the property proposed for protection (discussed in **Mitigation 4.2-19**) would reduce the potential impacts on wildlife corridors to less-than-significant levels.

**Impact 4.2-8:** Development of the proposed project would have the potential to affect populations of hollyleaf ceanothus (CNPS 1B) within the project area. Impacts would be considered less than significant given the design of the project.

The hollyleaf ceanothus was found in four locations on the Circle S Ranch, within four of the originally proposed vineyard blocks (1A, 29, 31 and 32; **Appendix D**, Figure 7; Winfield 2006). Block 31 had a high concentration of plants and was eliminated from proposed conversion to vineyard for that reason. The boundaries of the other three blocks in which it was found were altered to avoid direct impacts along with a minimum 25-foot buffer. Due to these modifications from the original proposal, no impacts to this species are expected.

**Mitigation Measure 4.2-8:** No mitigation would be necessary.

**Impact 4.2-9:** Development of the proposed project would have the potential to affect habitat for special status plant species on the project site and could result in conflicts with Goal CON-2 that requires the maintenance and enhancement of existing levels of biodiversity. Impacts are considered less than significant.

Bloom-season surveys for special status plant species were conducted over a three-year period by Winfield and Associates (2005-2006) and AES (2007). Growing season conditions over that period ranged from average and grazed (2005), to wetter than average (2006) and to drier than average (2007). These extremes provided opportunities to observe a range of species, including those that prefer wetter or drier conditions. Of 23 special status plant species with the potential to occur on the Circle S Ranch project site, two were found (hollyleaf ceanothus, see the discussion in **Impact 4.2-8** above; and green monardella, a CNPS List 4 species; though not required for the CEQA review process this List 4 species was considered in the discussion above).

It is clear that the Circle S Ranch harbors a diverse mosaic of vegetation types, despite indicators of a long history of heavy grazing (e.g., ubiquitous cover of numerous exotic

species--particularly those that increase with grazing, reduced woody cover along some drainages, low apparent regeneration of oak species, and high accessibility and forage capacity for cattle). By preserving some portion of each natural vegetation type, and all of the sensitive vegetation types, the potential to protect special status species that may be in the seed bank is greatly increased. In addition, protecting some portion of each vegetation type will help preserve the collective natural biodiversity of Foss Valley and provide potential areas for mitigation in the future.

Consistent with **Mitigation Measure 4.2-17**, the Applicant shall conserve undeveloped areas of the project site pursuant to Napa County Codes 18.108.100 and 18.108.027. The proposed vineyard development and mitigation strategies outlined in this section are consistent with the Napa County's General Plan Goal CON-2. The project would conserve greater than 60 percent of the biotic communities, provide for wildlife habitat diversity and movement, and provide for the enhancement of degraded habitats. Less-than-significant impacts would result.

**Mitigation Measure 4.2-9:** No mitigation is required.

**Impact 4.2-10:** Development and operation of the proposed project would have the potential to affect special status amphibian species. Impact is considered less than significant.

Amphibian declines have been attributed to several factors, including chemical runoff (particularly fertilizers and pesticides) into the aquatic environment, exotic bullfrogs and overall habitat degradation. Impacts related to the construction and operation of this project could result in chemical runoff and habitat degradation. As discussed in **Impact 4.2-5**, vineyard development near streams that meet the Napa County definition of a stream maintains minimum 50 foot setbacks (**Figure 4.2-8**), in compliance with the Napa County Conservation Regulations and Code 18.108.30. For drainages which do not meet the Napa County definition of a stream, 20-foot minimum setbacks are maintained (**Figure 4.2-8**). Minimum 50-foot setbacks are maintained around all wetlands, with the exception of proposed Block 2C (see **Impact and Mitigation Measure 4.2-6**). Using BMPs as proposed by the project, such as cover crop management and integrated pest management, in addition to the proposed setbacks, would effectively filter sediments, agricultural chemicals, and nutrients to a less-than-significant level (recommended buffer widths are discussed in **Impact 4.2-4**).

AES biologists conducted a California red-legged frog habitat assessment in 2007 and protocol surveys for frogs in 2008. Critical habitat for the California red-legged frog is approximately 3.2 miles north of the project site and there are two records of California red-legged frog within five miles of the project site. However, a series of mountain ridges exist

between the occurrences and the project site. Several aquatic features within project site have the potential to support breeding and/or dispersal habitat. No California red-legged frogs were seen during the surveys. Foothill yellow-legged frogs are known to occur in Milliken Creek and one was seen during a night survey in 2008 in Milliken Creek in the southeast corner of the property and three frogs were seen in Milliken Creek during two night surveys in 2008 at a neighboring property. The proposed project would not modify the physical conditions of any streams or wetlands on the project site. The proposed project includes the maintenance of stream and wetland setbacks (thereby directly protecting habitat), the restriction of earthmoving activities to the dry season (April 1 through September 1), and the installation of straw wattles, seeding and mulching of disturbed areas, and other erosion control measures discussed in **Chapter 3.0** (thereby indirectly protecting habitat). The proposed project would not increase runoff or degrade water quality (discussed in **Chapter 4.6**, Hydrology and Water Quality) and would not increase soil erosion or sedimentation (discussed in **Chapter 4.4**, Geology and Soils).

**Mitigation 4.2-10:** No mitigation is required.

**Impact 4.2-11:** Development of the proposed project would have the potential to affect American badger, a CDFG Species of Special Concern. This is a potentially significant impact. After mitigation, impacts would be considered less than significant.

As discussed above, a survey was conducted by AES personnel in July 2008 for badgers and signs of badgers in the potential habitat onsite. No evidence of badgers was found. Nonetheless, due to the high mobility of this species, pre-construction surveys should be conducted.

The American badger is sensitive to habitat disturbance both in its home range and in the effect disturbances have on its prey species. If American badgers are on the project site, direct mortality or indirect impacts due to stress could occur during construction activities. Soil disturbance (e.g., scraping and tilling) could destroy badger burrows and injure/kill the inhabitants.

**Mitigation Measure 4.2-11:** Pre-construction surveys for American badger shall be performed by a qualified biologist prior to development of the vineyard blocks that occur in potential badger habitat. The Applicant shall implement the following measures to avoid disturbing any American badger:



1. No more than two weeks before earthmoving activities begin, a survey for burrows and American badgers shall be conducted by a qualified biologist within 500 feet of construction activities.
2. If occupied burrows are found during pre-construction surveys, the biologist would consult with CDFG to determine whether the construction activities would adversely disrupt breeding behaviors of the badger.
3. If it is determined that construction activities would disrupt breeding behaviors, then avoidance between March through August may be the only mitigation available. Implementation of the project within 500 feet of occupied burrows during this time would be delayed until a qualified biologist can determine that juvenile badgers are self-sufficient enough to move from their natal burrow.

Implementation of **Mitigation Measure 4.2-11** would reduce the potential impacts on American badger to less-than-significant levels.

**Impact 4.2-12:** Development of the proposed project has the potential to affect valley elderberry longhorn beetles (VELB). This impact is considered less than significant.

The locations of 56 elderberry shrubs with trunk diameters greater than one inch were marked using a hand-held Trimble GPS unit (**Appendix D**). All of the shrubs appeared highly stressed with very little habitat that appeared appropriate for the beetle. A total of 131 trunks were surveyed. A majority of the shrubs had only one (42) or two (19) trunks. Fifty-eight of the trunks were in the small size class (one to three inches in diameter) most attractive to beetles, 44 trunks were three to five inches in diameter, and 26 trunks were greater than 5 inches in diameter. None of the shrubs occurred in riparian habitat; rather, they were found in oak woodland and savanna-like communities.

No evidence of the VELB was found by AES biologists on any of the 56 plants with trunks large enough (greater than one inch in diameter) to provide habitat for the beetle. The VELB is completely dependent upon elderberry shrubs for food and shelter for their entire lifecycle. But this beetle is typically associated with elderberries in riparian habitats. None of the shrubs mapped in and around the proposed vineyard blocks appeared to provide typical habitat for the VELB. The shrubs mapped on the project site were in dry, upland habitats (Coast Live Oak - Blue Oak - Foothill Pine NFD Alliance), far removed from wetlands and drainages. The project area is near the edge of the geographical range for the VELB. The nearest recorded incidence of the VELB to the project site occurs along Putah Creek from Lake Berryessa to Lake Solano and in the Suisan-Fairfield basin (approximately ten miles from the site), in both cases associated with riparian habitat.

Adams (2008) conducted an entomological survey on the Circle S Ranch in spring 2008 to determine if VELB or its non-listed close relative, (*Desmocercus californicus californicus*;

CELB, is present on the property (**Appendix D**). Adams states that there were no historical records for VELB or CELB in the Atlas Peak area prior to his survey of the Circle S Ranch. VELB was not found, but fourteen adult beetles of CELB were observed. Concurrent with his surveys, he documented VELB adults along Putah Creek, near Winters, demonstrating that adult VELB were active during the time of his surveys at the Circle S Ranch. This survey demonstrated the presence of CELB and not VELB on the property. CELB is not a special status species. The Applicant will submit the survey findings to the USFWS.

**Mitigation Measure 4.2-12:** No mitigation is required.

**Impact 4.2-13:** Development of the project would have the potential to affect western pond turtles. This is a potentially significant impact. After mitigation, impacts would be considered less than significant.

Western pond turtle has declined in conjunction with habitat alteration from urbanization and agricultural development. Nesting (i.e., oviposition) and basking habitat (important for egg maturation) are crucial to self-sustaining population. Loss of emergent wetland vegetation to grazing and trampling makes habitat less suitable for hatchlings and juveniles. Fire suppression on native grasslands may cause overgrowth which can excessively shade nesting grounds. Introduced predators such as bullfrogs and warm-water fish can decimate hatchling turtle numbers.

The western pond turtle was observed on the project site at the reservoir in the northwestern part of the site, at the pond east of the ranch buildings, and in five locations along Milliken Creek. Within Milliken Creek, three observations were made east of Atlas Peak Road and two to the west of the road, indicating that the entire stretch of the creek within the 1,590-acre holding is utilized by the species (personal communication w/Ted Winfield, 2008). Different sizes of western pond turtle were observed, indicating a breeding population on site. This species utilizes upland habitats in proximity to suitable aquatic habitats to lay eggs and take refuge from flooding or dry conditions. Suitable nesting and refuge habitat is present in the grassland and woodland habitats in proximity to occupied aquatic habitats.

Western pond turtles nest in open, sunny areas with little vegetation to ensure the quick development of their young. Nesting for the western pond turtle has been reported to occur up to 1,391 feet (402 meters) from water (Jennings and Hayes 1994), but is usually closer, averaging 92 feet (28 meters) from aquatic habitat (Rathbun et. al. 2002). To avoid the drying of late summer and flooding of winter, western pond turtles hibernate by burrowing into leaf litter in wooded upland habitats up to 1,640 feet (500 meters) away from water (Reese and Welsh, 1997). Two long term studies on the movements of the western pond turtle calculated two separate overwintering averages. Rathbun et al. (2002) calculated an average distance from water of 164 feet (50 meters). In contrast, Reese and Welsh (1997)

calculated an overwintering average of 643 feet (196 meters) from water. By using the relative sample size of each study, a weighted average from the two studies was calculated; this cumulative average overwintering distance from water is about 275 feet.

Approximately 40.4 acres of prime nesting habitat have been identified within the 1,590 acre holding (**Figure 4.2-9**). The aquatic habitat has been entirely avoided by way of the proposed 50 foot wetland buffers, which provides for adequate movement within the water bodies. In addition, stream corridors that have been preserved throughout the project site with setbacks that range from 20 feet (non-Napa County designated streams) to 50 feet on either side of the Napa County designated streams (**Figure 4.2-8**) would facilitate the species' movement. However, approximately 1.1 acres of prime nesting habitat is located within portions of proposed vineyard Blocks 1B, 8, 10B and 17B and would be lost as a result of the project. Approximately 192.4 acres of prime overwintering habitat have also been identified on the property (**Figure 4.2-9**); patches of open areas that may serve as potential nesting habitat are located in the prime overwintering habitat, but these areas are not considered prime nesting areas. Approximately 8.2 acres of prime overwintering habitat are located within portions of proposed vineyard Blocks 1B, 6C, 8, 10B, 13, 17B, 18, 25C, 26, 27, 29, 32, and approximately 0.5 acres are located in the cleared area proposed between Blocks 9 and 10B. A portion of the proposed cleared area between proposed Blocks 9 and 10B that would be used for rock storage also has the potential to block a corridor to prime overwintering habitat. These areas shall be avoided to ensure adequate nesting and overwintering areas and the continued survival of the species (see **Mitigation Measure 4.2-13** below).

Grading and vineyard operations could also result in impacts by way of trampling of vegetation and soil compaction by heavy equipment. Adequate nesting habitat and buffers shall be required and observed to prevent potential impacts that may result from vineyard development and subsequent vineyard operation and maintenance, and to ensure impacts are reduced to a less than significant level (see **Mitigation Measure 4.2-13** below).

The western pond turtle is a habitat generalist and will traverse terrain until suitable habitat for nesting and overwintering is reached. It is possible that western pond turtles will attempt to cross vineyard blocks in the future. Direct mortality and other impacts could occur during grading and other activities related to vineyard development and ongoing operation.

**LEGEND**

Property Boundary

Existing Reservoir

USGS Streams

Other Drainages

**Buffer**

Prime Nesting Habitat - 100 Feet

Prime Overwintering Habitat (with some potential nesting habitat) - 275 Feet

Proposed Vineyard located outside WPT Buffers

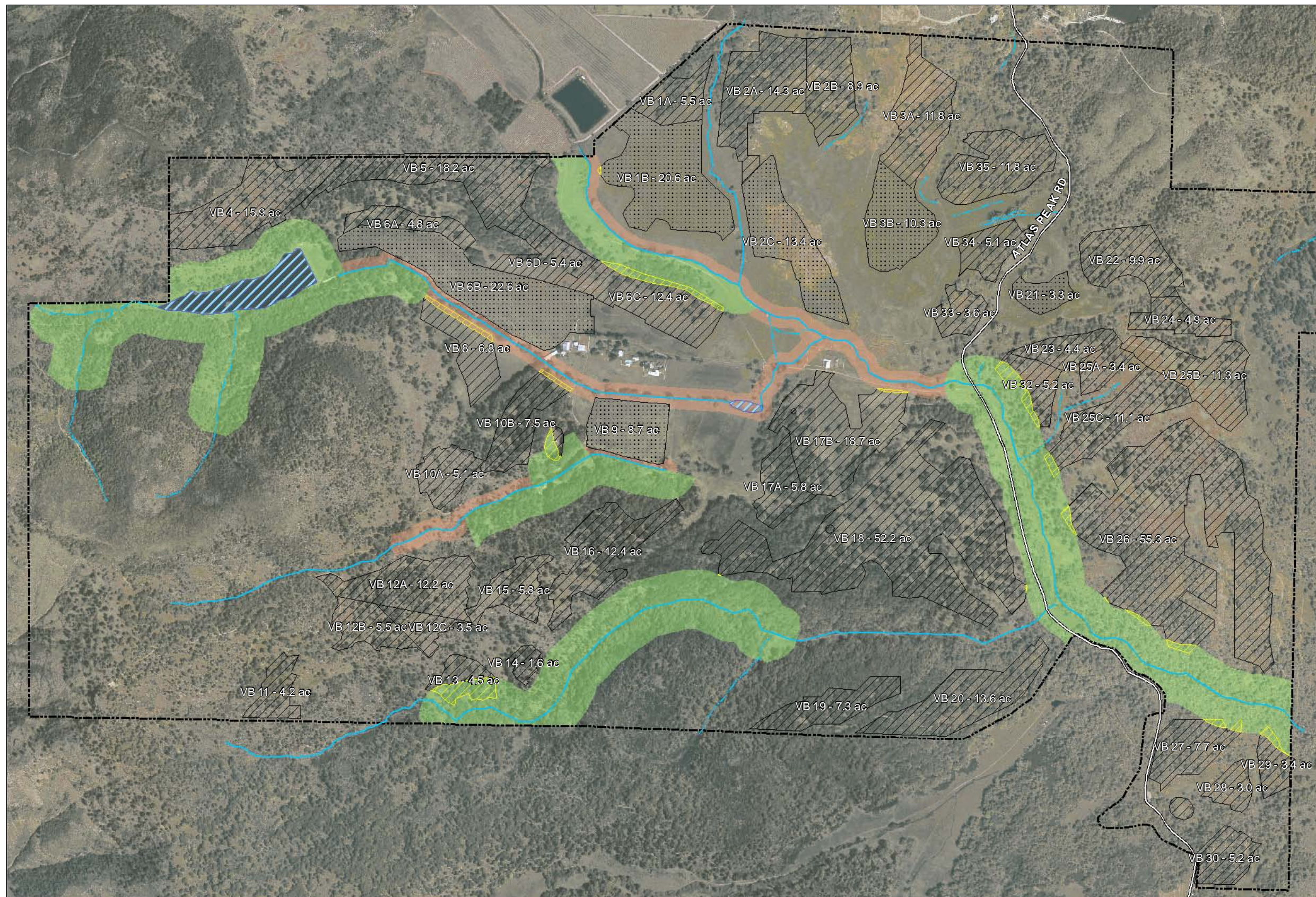
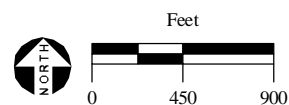
Slopes Greater Than 5% and Included in ECPA

Slopes Less Than 5% and Not Included in ECPA

Proposed Vineyard located within WPT Buffers

Slopes Greater Than 5% and Included in ECPA

Slopes Less Than 5% and Not Included in ECPA



**Figure 4.2-9**  
Western Pond Turtle Prime Nesting and Prime Overwintering Habitat Buffers

**Mitigation Measure 4.2-13:** Prior to approval of #P06-01508-ECPA, the plan shall be modified to include the following (any associated project features that become unnecessary as a result of the avoidance, such as proposed roads, shall also be reflected in the revised in the plan):

To protect prime upland nesting habitat a 100 foot buffer (30.5 meters) shall be maintained along identified water habitats surrounded by open grassland and agricultural areas. These areas include portions of Milliken Creek, and the northern and middle tributaries running through the western portion of the site (**Figure 4.2-9**). A 275 foot buffer (84 meters), placed along water features that are surrounded by oak woodland shall be maintained to provide ample protection of overwintering habitats. Furthermore, open areas interspersed within this overwintering buffer will provide additional nesting habitat. These areas include the reservoir and surrounding drainages, portions of Milliken Creek, a portion of the middle tributary flowing south of Block 9, and a portion of the southernmost stream on site (**Figure 4.2-9**). Proposed Blocks 1B, 6C, 8, 10B, 13, 17B, 18, 25C, 26, 27, 29, 32, and a portion of the cleared area proposed between Blocks 9 and 10B for rock storage shall be modified to reflect these buffers, reducing their acreages by approximately 8.8 acres; the exact areas shall be staked and flagged in the field by a qualified biologist prior to construction and shall be field verified by Napa County.

Two weeks prior to the commencement of ground disturbing activities near aquatic habitats, a qualified biologist shall perform western pond turtle surveys within suitable aquatic habitat on the project site. If a pond turtle is located in an aquatic habitat during the nesting season (May to July), a subsequent survey of the surrounding upland habitats will be conducted to determine the suitability of the upland habitats for nesting and to examine the area for any evidence of turtle nesting activity. Ground disturbance within suitable nesting habitat would not proceed until the work area is surveyed and a recommendation made by a qualified biologist. Due to the western pond turtle's tendency to travel long distances and cross disturbed habitats, all construction and vineyard personnel on site shall be educated by a qualified biologist prior to commencement of development activities to identify and avoid western pond turtles. From May through July, a turtle exclusion fence shall be installed around all grading and construction activities within or bordering nesting habitat to prevent impacts. From October through March a turtle exclusion fence shall be installed around all activities within or bordering overwintering habitat to prevent impacts and the fencing shall be field verified by Napa County. The fence shall be constructed from silt fencing to avoid turtle injury and entrapment. A qualified biologist shall also be present during the activities to relocate any turtles that are found in proximity to or within construction areas. Impacts would be considered less than significant with implementation of **Mitigation Measure 4.2-13**.

**Impact 4.2-14:** Development of the proposed project would have the potential to affect special status bird species. This is considered a potentially significant impact. After mitigation, impacts would be considered less than significant.

Development of the proposed project would result in direct impacts to a portion of the grassland (approximately 130 acres or 38.7 percent), woodland (approximately 284 acres or 31 percent) and chaparral/shrubland habitats (approximately 15 acres or 18 percent) on the project site. Removal of woody and herbaceous vegetation within portions of the project site would be required to implement the proposed project. This vegetation represents potential nesting and foraging habitat for migratory birds and raptors.

Bird species requiring forest interior habitat for breeding and species wintering in the tropics tend to inhabit larger woodland blocks; short-distance migrants and species breeding in forest edge habitat would be more likely found in smaller woodland blocks. As mitigation for oak woodland impacts (**Impact and Mitigation Measure 4.2-19**) 129 acres of oak woodland and riparian oak woodland will be restored. The restoration of 105 acres of upland oak woodland habitat will create more continuous blocks of habitat by infilling within existing areas of woodland. The restoration of 24 acres of continuous riparian oak woodland will significantly increase the value of that degraded corridor and increase overall habitat diversity on the property.

Recently removed from the list of California Species of Concern, a Cooper's hawk was observed flying in the northern portion of project site. In addition, potential nesting habitat for the following special status birds occurs on site for: western burrowing owl, white-tailed kite, northern harrier, merlin, prairie falcon, long-eared owl, olive-sided flycatcher, loggerhead shrike, yellow warbler, yellow-breasted chat, purple martin and tricolored blackbird. Marginal foraging habitat may be present for osprey, bald eagle and golden eagle.

Several species are federal "birds of conservation concern", which is a designation of conservation priority, but this designation is not a ruling as to whether the species shall be listed as federal threatened/endangered and therefore protected from incidental take by the FESA. However, under the Migratory Bird Treaty Act of 1918 (16 USC Subsection 703-712), migratory bird species and their nests and eggs are protected from injury or death. Therefore, project-related disturbances must be reduced or eliminated during the nesting cycle. In addition, CFG Code Subsections 3503, 3503.5, and 3800 prohibit the possession, incidental take, or needless destruction of birds, their nests, and eggs. Finally, even though they are delisted, bald eagles are still protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. These Acts require some measures to continue to prevent bald eagle "take" resulting from human activities.

Project construction would occur during nesting season for most bird species (early April through mid-September). The project is in the Milliken Reservoir drainage, a County-designated sensitive domestic water supply in which Section 18.108.027 of the County code limits earth-disturbing activities to April 1 through September 1. Construction-related disturbances in these habitats during the nesting season could result in significant adverse impacts to bird species, including disruption of breeding, increased stress and mortality.

Bird species identified during all field visits to the Circle S Ranch have been included in the summary list of species for the site (**Appendix D**). In July 2008, AES personnel also surveyed the vineyard blocks and adjacent areas to identify habitat suitable for special status birds on the property. A total of 63 species of birds have been observed on the property to date. All of the proposed vineyard blocks were examined for habitat suitability and surveyed for special status species identified in this chapter. Only one special status bird species was identified, the olive-sided flycatcher. Three individuals of this species were observed near the existing reservoir and south of the southern boundary of proposed Block 6B.

Two mitigation measures are proposed below, one dealing with birds nesting above ground and the other with birds nesting below ground (i.e., burrowing owl). Burrowing owls occur in open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports, nesting and roosting in burrows dug by mammals. Burrowing owls spend much time on the ground or on low perches such as fence posts or dirt mounds in search of prey that consists of insects, small mammals, birds, and carrion. Nesting is often in abandoned burrows (e.g., prairie dog, ground squirrel, fox, woodchuck, and tortoise) and can be identified by the lining of feathers, pellets, debris, and grass. Overall, the habitat quality on the Circle S Ranch may be marginal for this species, due to the apparently low density of burrows (a reflection of prey and predator densities; Cliff Feldheim, personal observation, 2008). Nevertheless, potential suitable habitat would include the grasslands and savanna-like woodlands on the property. Greater than 60 percent (approximately 165 out of 267 acres) of the grassland acres onsite will remain protected and will be accessible for burrowing owl habitat. The acreage of oak savanna that could also serve as habitat for this species onsite would include a portion of the lowest density areas identified by Nix (2006).

**Mitigation Measure 4.2-14a:** The Applicant shall implement the following measures to avoid disturbing any special status species nesting above ground. Vegetation removal conducted during the nesting period shall require a pre-construction survey for active bird nests, conducted by a qualified biologist. No known active nests shall be disturbed without a permit or other authorization from USFWS and/or CDFG.

1. For earth-disturbing activities occurring during the breeding season (March 1 through September 1), a qualified biologist shall conduct pre-construction surveys of all potential nesting habitat for all birds within 500 feet of earthmoving activities.
2. If active special status bird nests are found during pre-construction surveys 1) a 500-foot no-disturbance buffer will be created around active raptor nests during the breeding season or until it is determined that all young have fledged, and 2) a 250-foot buffer zone will be created around the nests of other special status birds and all other birds that are protected by California Fish and Game Code 3503. These buffer zones are consistent with CDFG avoidance guidelines and CDFG buffers required on other similar ECPA projects; however, they may be modified in coordination with CDFG based on existing conditions at the project site.
3. If pre-construction surveys indicate that nests are inactive or potential habitat is unoccupied during the construction period, no further mitigation is required. Shrubs and trees that have been determined to be unoccupied by special status birds or that are located 500 feet from active nests may be removed.
4. If vegetation removal activities are delayed or suspended for more than two weeks after the pre-construction survey, the areas shall be resurveyed.

**Mitigation Measure 4.2-14b:** The Applicant shall implement the following measures to avoid disturbing any burrowing owls. No more than two weeks before earthmoving activities begin, a survey for burrows and burrowing owls shall be conducted by a qualified biologist within 500 feet of construction activities. The survey shall conform to protocol described by the California Burrowing Owl Consortium (1997), which includes up to four surveys on different dates if there are suitable burrows present. If occupied owl burrows are found during pre-construction surveys, CDFG will be consulted. Mitigation measures may include one or more of the following:

1. A qualified biologist shall determine whether the construction activities will adversely disrupt breeding behaviors of the owl (within 500 feet of construction activities). If it is determined that construction activities would not disrupt breeding behaviors, construction may proceed without further restrictions.
2. If it is determined that the project could adversely affect occupied burrows during the August 31 to February 1 non-breeding season, a qualified biologist may relocate the owl(s) from the occupied burrow(s) using one-way doors. There shall be at least two burrows suitable for the owls within 300 feet of the occupied burrow before one-way doors are installed. The unoccupied burrows shall be at least 160 feet away from construction activities and can be natural or artificially created according to current design specifications. Artificial burrows shall be installed at least one week before one-way doors are installed on occupied burrows. One-way doors shall be in place at least 48 hours before burrows are excavated.



3. If it is determined that construction activities would disrupt breeding behaviors during the nesting season (February 1 to August 31), then avoidance is the only mitigation available (California Burrowing Owl Consortium 1997; CDFG 1995). Implementation of the project within 250 feet of occupied burrows during this time would be delayed until a qualified biologist can determine that the owls are no longer nesting or that juvenile owls are self-sufficient enough to move from their natal burrow.

With implementation of **Mitigation Measures 4.2-14a** and **4.2-14b** as called for, impacts would be considered less than significant.

**Impact 4.2-15:** Development of the proposed project would have the potential to affect special status bat species. After mitigation, impacts would be considered less than significant.

Development of the proposed project could result in direct impacts to bat nesting habitat through the removal of large trees with sufficient decay to provide roosting habitat. Four special status bat species have the potential to occur on the project site including the pallid bat, Townsend's big-eared bat, fringed myotis, and long eared myotis. These bat species could potentially forage over the project site and roost under bark or in cavities of trees, rock crevices or in human-made structures.

According to the Arborist Report for the Circle S Ranch (Nix, 2007), the total estimated tree population with a diameter at breast height (dbh) greater than five inches on site is 48,830. There are approximately 871 acres of oak woodland vegetation alliances on the project site (**Table 4.2-2**). The proposed vineyard development would remove an estimated 13,849 trees with a dbh greater than five inches. This represents a loss of 28.4 percent of the trees on the project site. Approximately 289 acres of oak woodland would be removed by the proposed project. Of the 13,849 trees to be removed, 4,339 (31.3 percent) were rated as being in poor or very poor health or structural condition, 9,236 (66.7 percent) rated average, and 276 (2.0 percent) rated as good or very good. The majority of the trees that rated poor or very poor had structural defects and decay resulting from damage sustained in past wildfires (e.g., 1981 Atlas Peak Fire). Such damage in trees can provide roosting habitat for bats and increase overall biodiversity in woodland habitats. Trees with structural defects or decay are distributed throughout the entire property. The 13,849 trees are an adequate sample to assume that the entire population of trees with defects across the site is approximately 31 percent of the total 48,830 trees. Roosting habitat in rock crevices or human-made structures will not change. Therefore, at least 69 percent of the tree roosting habitat will remain after project development. Further, land preserved (see **Mitigation Measure 4.2-19**) will secure potential habitat in perpetuity.

These bat species breed between March 1 and August 31. Construction related activities within the vicinity of roosting habitat also have the potential to impact nesting bats. Project construction would occur during the breeding season for bat species (between early April and mid-September). The project is within the Milliken Reservoir drainage, a County-designated sensitive domestic water supply drainage, in which Section 18.108.027 of the County code limits earth-disturbing activities to April 1 through September 1. Potentially significant impacts could occur to bat roosting habitats during the breeding season, resulting in significant impacts to these bat species.

In July 2008, AES personnel surveyed the vineyard blocks and adjacent areas to identify habitat suitable for special status bats on the property. All of the proposed vineyard blocks were examined for habitat suitability for bats. Suitable roosting habitat for the Townsend's big-eared bat (i.e., rock crevices and hollow trees) is not abundant within the vineyard blocks. If this species does occur within the area, it would be in very low numbers and likely only passing through the area. Vineyard development would not have a significant effect on this species.

Suitable roosting habitat for the pallid bat (i.e., basal hollow of redwoods, bole cavities in oaks, exfoliating bark in valley oaks, ponderosa pines and deciduous trees in riparian areas, and man-made structures) is not abundant within the vineyard blocks. If this species does occur in the greater area, it would be in very low numbers and likely only passing through. Vineyard development would not have a significant effect on this species. Vineyard development could improve foraging habitat for the species by creating edge habitat and more open habitats.

Suitable roosting habitat for the long-eared myotis bat (i.e., exfoliating bark, hollow trees, rocky outcrops, man-made structures) is not abundant within the vineyard blocks. If this species does occur within the area, it would be in very low numbers and likely only passing through the area. Vineyard development would not have a significant effect on this species and could improve foraging habitat for the species by creating more edge habitat and more open habitats.

Suitable roosting habitat for the fringed myotis bat (i.e., hollow trees and snags, rocky outcrops, man-made structures) is not abundant within the vineyard blocks. If this species does occur within the area, it would be in very low numbers and likely only passing through the area. Vineyard development would not have a significant effect on this species and could improve foraging habitat for the species by creating more edge habitat and more open habitats.

The breeding and foraging habitat for these species in the proposed vineyard blocks and adjacent areas is marginal; rock outcrops and decadent trees are sparse in the blocks and

caves are absent. However, because they can travel many miles from roosts to foraging habitat they could forage in the area. Although the vineyard blocks would remove some natural habitat, they would open new foraging habitat and consequently could enhance habitat quality across the landscape.

**Mitigation Measure 4.2-15:** Construction activities conducted during the breeding season shall require a pre-construction survey for active bat roosts, conducted by a qualified biologist. No known active bat roosts shall be disturbed without a permit or other authorization from USFWS and/or CDFG. Implementation of the following mitigation measures would reduce the potential impact to a less-than-significant level.

1. For earth-disturbing activities occurring during the breeding season (March 1 through August 31), a qualified wildlife biologist shall conduct pre-construction surveys of all potential bat-roosting habitat for special status bats within 200 feet of earthmoving activities. Roosting habitat surveys shall focus on a) trees slated for removal that have loose bark, or holes/crevices in the trunk and b) rock piles slated for removal that contain crevices.
2. If active special status bat roosts are found during pre-construction surveys, CDFG will be consulted. A no-disturbance buffer (acceptable in size to CDFG) will be created around active bat roosts during the breeding season or until it is determined that all young have fledged.
3. If pre-construction surveys indicate that roosts are inactive or potential habitat is unoccupied during the construction period, no further mitigation is required. Trees that have been determined to be unoccupied by special status bats may be removed.
4. If vegetation removal activities are delayed or suspended for more than two weeks after the pre-construction survey, the areas shall be resurveyed.

With implementation of **Mitigation Measure 4.2-15** as called for, impacts would be considered less than significant.

**Impact 4.2-16:** Development of the proposed project would have the potential to affect special status aquatic species. Impacts would be considered less than significant.

Fish are known to occur in Milliken Creek and in the portions of Milliken Creek upstream and downstream of Milliken Reservoir. Although the intermittent and ephemeral streams present on the project site do not provide suitable habitat for special status fish, they do provide habitat for other aquatic species. The proposed project would not modify the physical conditions of any streams on the project site. The proposed project includes the maintenance of stream setbacks, the restriction of earthmoving activities to the dry season (April 1 through September 1) consistent with County Code Section 18.108.070(L), and the installation of straw wattles, seeding and mulching of disturbed areas, and other erosion

control measures discussed in **Chapter 3.0**. The proposed project would not increase runoff rates or volumes, or degrade water quality (discussed in **Chapter 4.6 Hydrology and Water Quality**) and would not increase soil erosion or sedimentation (discussed in **Chapter 4.4 Geology and Soils**). Potential impacts to downstream fish populations and aquatic species would be less than significant.

**Mitigation 4.2-16:** No additional mitigation is required.

**Impact 4.2-17:** Development of the proposed project could result in conflicts with Napa County Code Section 18.108.027B. Napa County Code Section 18.108.027B requires the retention of a minimum of 60 percent of the tree canopy cover that existed on the project site in 1993, or when vegetation consists of shrub and brush without tree canopy, a minimum of 40 percent of the shrub, brush and associated annual and perennial herbaceous vegetation. Impacts would be considered less than significant.

Vineyard proposed under #P06-01508-ECPA and on slopes greater than five percent would retain 76 percent of the tree canopy cover and 66 percent of the shrub and brush without tree canopy that existed on the property in 1993 (PPI, 2007). No conflict with the vegetation retention requirements of Code Section 18.108.027B would occur.

**Mitigation 4.2-17:** No mitigation is required.

**Impact 4.2-18:** Development of the proposed project could result in conflicts with Napa County Code Section 18.108.025 (General provisions – Intermittent/perennial streams). Impacts would be considered less than significant.

Napa County Code Section 18.108.025 states that clearing of land for new agricultural uses must comply with designated stream setbacks (based on slope) that are measured from the top of the bank on both sides of the stream as it exists at the time of replanting, redevelopment, or new agricultural activity. Stream corridors have been preserved throughout the project site and setbacks range from 20 feet (non-Napa County designated streams) to a range of 35 to 50 feet on either side of the Napa County designated streams. A minimum 50 foot setback shall be maintained around all wetlands. These setbacks have been illustrated on **Figure 4.2-8**.

**Mitigation 4.2-18:** No mitigation is required.

**Impact 4.2-19:** Development of the proposed project could result in conflicts with the California Oak Woodlands Conservation Act (2001) and Napa County Code Section 18.108.100, and the General Plan Goals CON-2 and CON-6 and Policies CON-17 and CON-24. This would be considered a potentially significant impact.
















According to the Tree Inventory Report for the Circle S Ranch (Nix, 2006), the total estimated tree population with a diameter at breast height (dbh) greater than five inches on site is 48,830. There are approximately 871 acres of oak woodland vegetation alliances on the project site. The proposed vineyard development would remove an estimated 13,849 trees with a dbh greater than five inches (which includes 9,571 oak trees). This represents a loss of 28.4 percent of the trees on the project site. Of the 13,849 trees to be removed, 4,339 (31.3 percent) were rated as being in poor or very poor health or structural condition, 9,236 (66.7 percent) rated average, and 276 (2.0 percent) rated as good or very good. The majority of the trees that rated poor or very poor had structural defects and decay resulting from damage sustained in past wildfires (e.g., 1981 Atlas Peak Fire). Such damage in trees can provide nesting and foraging habitat for animals and increase overall biodiversity in woodland habitats.

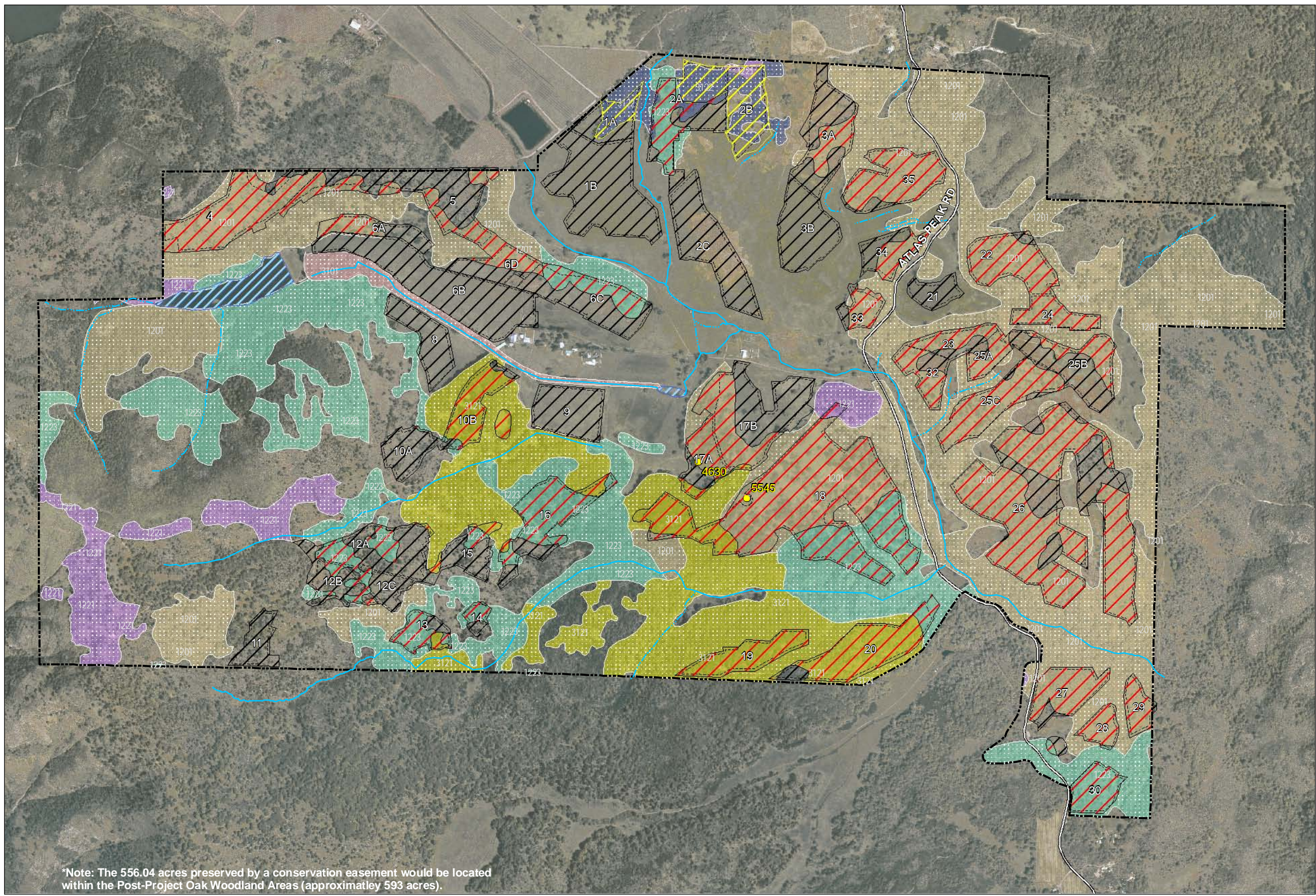
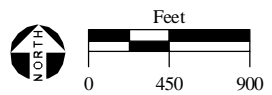
The most common tree species on site is black oak (approximately 12,499 trees or 25.6 percent), followed by live oaks (*Quercus agrifolia* and *Q. wislizenii* with approximately 10,330 trees or 21.1 percent), foothill/gray pine (approximately 9,135 or 18.7 percent) and blue oak (approximately 9,123 or 18.7 percent). On a per-tree basis, vineyard development would displace an estimated 29 percent of the black oak, 22.7 percent of the live oaks, 44.4 percent of the foothill pine, and 35 percent of the blue oak on the project site. Half of the trees (50.6 percent) to be removed by vineyard development are 12 inches dbh or less. Approximately 29.8 percent are 13 to 18 inches dbh, 13 percent are 19 to 24 inches dbh, and 6.6 percent are greater than 24 inches dbh.

On a per-acre basis, a little over half (approximately 871 acres) of the 1,593-acre Circle S Ranch supports oak woodlands. Approximately 289 of those acres (33 percent) are proposed for development. This acreage supports a diversity of oak woodland biotic communities, including Black Oak Alliance; Blue Oak Alliance; Coast Live Oak - Blue Oak - (Foothill Pine) NFD Association; Coast Live Oak Alliance; and Mixed Oak Alliance Valley Oak - (California Bay - Coast Live Oak - Walnut - Ash) Riparian Forest NFD Association.

Two large specimen trees occur within two proposed vineyard blocks as identified by Nix (2006). Trees that are of larger than average stature, dbh and in good health are generally considered to be significant or notable. Significant or notable trees include older growth trees that have reached or surpassed 50 percent of the maximum ages for the represented species in the area, and that contribute to habitat and biological diversity by virtue of their long history interacting in their environment. Below is a summary of these trees (Figure 4.2-10):

**LEGEND**

-  Property Boundary
-  Significant Oak Tree
-  Vineyard Avenues
-  Post-Project Oak Woodland Areas\*
-  Oak Woodland Areas Converted to Vineyard
-  Non-Oak Woodland Areas Converted to Vineyard
-  Vineyard Removed
-  Existing Reservoir
-  USGS Streams
-  Other Drainages
- Vegetation Alliances
-  Black Oak Alliance
-  Blue Oak Alliance
-  Coast Live Oak - Blue Oak - (Foothill Pine) NFD Association
-  Coast Live Oak Alliance
-  Mixed Oak Alliance
-  Valley Oak - (California Bay - Coast Live Oak - Walnut - Ash) Riparian Forest NFD Association



\*Note: The 556.04 acres preserved by a conservation easement would be located within the Post-Project Oak Woodland Areas (approximately 593 acres).

**Figure 4.2-10**  
Oak Woodlands

- A single significant live oak tree (in good health and very large size; dbh = 45 inches) was noted in proposed Block 17A (Tree Number 4630; Nix, 2006).
- A single significant black oak tree (in good health; dbh = 45 inches) was noted in proposed Block 18 (Tree Number 5545; Nix, 2006).

The California Oak Woodlands Conservation Act requires Napa County to determine whether or not the proposed project would result in a significant impact on oak woodlands. If it is determined that this project would result in a significant impact on oak woodlands

that cannot be avoided, a series of actions may be prescribed by the County. These would include but are not limited to the use of conservation easements, replacement planting, contribution to the Oak Woodlands Conservation Fund, or a combination of these and other actions. However, the conversion of oak woodlands on agricultural land used to produce or process plant and animal products for commercial purposes is exempt from this regulation.

Napa County Code Section 18.108.100 requires a permit for tree removal, and the installation of fencing or other protection measures for construction near retained trees within an erosion hazard area. Failure to protect retained trees from construction damage (e.g., soil compaction from heavy equipment, damage to bark and branches) can result in premature tree disease and mortality. In addition, wherever the removal of vegetation is necessitated and authorized, the director or designee may require the planting of replacement vegetation of an equivalent kind, quality and quantity.

Related Napa County General Plan Goals CON-2 and CON-6, and Policies CON-17 and CON-24. Goal CON-2 requires maintenance and enhancement of existing levels of biodiversity. Goal CON-6 requires the preservation, sustainment and restoration of forests, woodlands, and commercial timberland for their economic, environmental, recreation, and open space values. Policy CON-17 requires the protection of sensitive biotic communities and habitats of limited distribution, including by requiring no net loss of sensitive biotic communities and habitats of limited distribution through avoidance, restoration, or replacement where feasible. Where avoidance, restoration, or replacement is not feasible, preservation of like habitat at a 2:1 ratio or greater within Napa County is required to avoid significant cumulative loss of valuable habitats. Napa County General Plan Policy CON-24 requires:

- The maintenance and improvement of oak woodland habitat to provide for slope stabilization, soil protection, species diversity, and wildlife habitat;
- Replacement of lost oak woodlands or preservation of like habitat at a 2:1 ratio, with species of limited distribution avoided to the maximum extent feasible;
- Retention of adequate stands of oak trees sufficient for wildlife, slope stabilization, soil protection, and soil production; and
- Maintenance of a mixture of oak species needed to ensure acorn production.

The conversion of approximately 289 acres of oak woodland to vineyard represents a significant loss of native woodland habitat. When significant acreages of oak woodland are converted to other uses, Napa County recommends full or partial avoidance of the target resources first. When avoidance (in whole or in part) is not feasible or is not adequate to reduce impacts to a level of insignificance, Napa County requires preservation of comparable resources through the use of conservation easements or deed restrictions. When no or insufficient comparable resources can be identified for preservation nearby, Napa County recommends enhancement (through replanting and/or management) of similar but degraded resources nearby.

**Mitigation 4.2-19:** Prior to approval of #P06-01508-ECPA, the plan shall be modified to include the following (any associated project features that become unnecessary as a result of the avoidance, such as proposed roads, shall also be reflected in the revised in the plan):

Impacts to oak woodland would be reduced to a less-than-significant level and result in the greatest quality of oak woodland mitigation through a combination of avoidance, preservation, and enhancement. Specifically, mitigation for the removal of the estimated 13,849 trees on approximately 289 acres would be accomplished through a combination of 1) avoidance of oak woodlands of limited distribution within the project area and immediate vicinity; 2) preservation and conservation of oak woodlands having the highest habitat values and qualities at a 2:1 preservation-to-vineyard ratio on a per acre basis; and 3) through the restoration and enhancement of existing oak woodlands implemented by an oak woodland restoration plan. **Table 4.2-4** provides a breakdown of vegetation alliances and associations within the entire project site and proposed for removal.



**TABLE 4.2-4**  
OAK WOODLAND VEGETATION ALLIANCES AND ASSOCIATIONS  
AND PRESERVATION ACREAGE

Vegetation Alliances	Project Site Acreage	Vineyard Block Acreage	%Vineyard Block Out of Project Site	2:1 Preservation Acreage
Black Oak Alliance	141.27	36.61	25.91%	73.22
Blue Oak Alliance	18.00	1.58 <sup>1</sup>	8.78%	3.16
Coast Live Oak - Blue Oak - (Foothill Pine) NFD Association	457.32	187.76	41.06%	375.52
Coast Live Oak Alliance	39.59	1.33	3.36%	2.66
Mixed Oak Alliance	203.65	50.13	24.62%	100.26
Valley Oak - (California Bay - Coast Live Oak - Walnut - Ash) Riparian Forest NFD Association	10.84	0.66	6.09%	1.32
<b>Total</b>	<b>870.67</b>	<b>278.07</b>		<b>556.04</b>

1. 12.84 acres are proposed for removal with the project; however, only approximately 1.6 acres would be impacted with implementation of the avoidance measure below.

Notes: Acreages are approximate. NFD = not formally defined.

Sources: Modified from Thorne et al., 2004; Napa County, 2008.

### **Avoidance**

Approximately 1,188 acres are potentially available for vineyard conversion within the 1,593-acre holding. Originally a total of 730 acres at the Circle S Ranch were designated as potential sites for vineyard. After taking into consideration a number of environmental factors such as the loss of oak woodland habitat, the project was redesigned and reduced to approximately 459 gross acres; thereby avoiding 166 acres of trees among other natural resources (reference oak woodland section). The project avoids approximately 594 acres of oak woodland, or 68 percent of the oak woodland on the property. In addition, with the mitigation described above to maintain buffers from streams, wildlife corridors and western pond turtle habitat, the project would be reduced to preserve approximately 13 acres of oak woodland.

As illustrated in **Table 4.2-4** the Blue Oak Alliance is shown to be a vegetation type that is limited within the property and general vicinity. Approximately 18 acres of Blue Oak Alliance exists within the property. Approximately 12.84 acres (71 percent) are proposed for removal within portions of proposed Blocks 1A, 2A and 2B located at the northern property boundary. General Plan Policy CON-24 requires the maintenance and improvement of species diversity (among other things) as well as a mixture of oak species, including black, live, brewer oaks as well as blue, white, scrub and live oaks. Given that Blue Oak Alliance is limited within the property and a majority is proposed for removal, portions of the Blue Oak woodland shall be avoided. Specifically, proposed Blocks 1A and 2B shall be reconfigured to completely avoid the areas of the Blue Oak Alliance. Proposed Block 2A shall be reconfigured to avoid the majority of the Blue Oak Alliance (approximately 91.2 percent of

Blue Oak Alliance is avoided on the property), as shown in **Figure 4.2-10**. In addition, given its limited local distribution, blue oaks shall be replanted at a 2:1 replacement ratio, as described in the Preservation and Enhancement section below.

The significant large trees (as identified by Nix and discussed in the Biological Resources Assessment Addendum, dated August, 2008; **Appendix D**) located within proposed vineyard Blocks 17A and 18 shall be avoided. All preserved trees within 50 feet of ground-disturbing activities should be protected on the project site with visible orange fencing during all phases of construction activities. Visible orange fencing shall be placed at the edge of the dripline (edge of the tree canopy) to protect above- and below-ground tissues of these trees and shall be field verified by Napa County. The following shall not occur within the dripline of any retained tree: parking or storage of vehicles, machinery or other equipment; stockpiling of excavated soils, rocks or construction materials; or dumping of oils or other chemicals. A certified arborist shall perform any pruning deemed necessary. No more than 25 percent of a tree canopy of perimeter trees shall be removed by pruning of retained trees.

#### **Preservation and Enhancement**

Direct impacts to oak woodlands should be mitigated by preserving the majority of the remaining onsite oak woodlands at a 2:1 ratio on a per acre basis, as described below.

Based on **Table 4.2-4**, there is sufficient acreage of oak woodland on the project site to provide for preservation at a 2:1 ratio. Approximately 556.04 acres of oak woodland preservation acres are needed and 870.67 acres of oak woodland occur on the project site (or 592.60 acres after development of the proposed project). The permanent protection of 556.04 acres is discussed below. As there is more oak woodland acreage available onsite than is required for preservation through a 2:1 ratio, acreage included in the preservation area should be selected in a manner to minimize fragmentation of the oak woodland on the project site. Minimizing fragmentation of oak woodlands increases their habitat value to birds and other wildlife by reducing negative edge effects. **Figure 4.2-10** depicts the oak woodland vegetation alliances that would be impacted through project development and highlights the remaining areas onsite available for conservation.

To mitigate for development of oak woodland, a total of 556.04 (from **Table 4.2-4**) shall be preserved in perpetuity. All acreage designated for preservation shall be identified as such in a deed restriction, conservation easement with an organization such as the Land Trust of Napa County as the grantee, or other means of permanent protection. Land placed in protection shall be restricted from development and other uses that would degrade the quality of the habitat (including, but not limited to conversion to other land uses such as agriculture or urban development, and excessive off-road vehicle use that increases erosion) and should be otherwise restricted by the existing goals and policies of Napa

County. Standard adaptive management erosion control and fire management practices shall be observed in these areas as well. For example, the ECP prepared for the proposed project identified approximately 520 acres on the project site as tree management areas (**Figure 3-12**); activities in these areas would be overseen by a Registered Professional Forester. The tree management plan shall include the planting of a minimum of 3.16 acres of blue oaks to mitigate impacts to Blue Oak Alliance to a less-than-significant level. The final locations subject to deed restriction shall be selected based on their ecological value and shall be identified in conjunction with the property owner and Napa County prior to any vegetation removal, grading and earthmoving activities. Documentation on the establishment of the preservation area in a form acceptable to the County shall be submitted to Napa County prior to any vegetation removal, grading and earthmoving activities.

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## 4.3 CULTURAL AND PALEONTOLOGICAL RESOURCES

### 4.3.1 CULTURAL SETTING

#### 4.3.1-1 REGIONAL SETTING

The project area lies within a hilly area of the Foss Valley. A number of seasonal creeks drain into perennial Milliken Creek, which is central to Foss Valley. This area contains a riparian/oak woodland environment that would have provided an attractive environment for both prehistoric and historic occupants to live and gather resources.

An analytic framework for the interpretation of Napa County prehistory is provided by Fredrickson (1974), who divided human history in California into three broad periods: the Paleo-Indian period, the Archaic period, and the Emergent period. This framework used sociopolitical complexity, trade networks, population, and the introduction and variation of artifact types to differentiate between cultural units; the scheme remains the dominant framework for the prehistoric archaeological research in this region. The Paleo-Indian period (10,000-6,000 B.C.) was characterized by small, highly mobile groups occupying broad geographic areas. During the Archaic period, consisting of the Lower Archaic period (6,000-3,000 B.C.), Middle Archaic period (3,000-1,000 B.C.), and Upper Archaic period (1,000 B.C.-A.D. 500), geographic mobility may have continued, although groups began to establish longer-term base camps in localities from which a more diverse range of resources could be exploited. The addition of milling tools, obsidian and chert concave-base points, and the occurrence of sites in a wider range of environments suggest that the economic base was more diverse. By the Upper Archaic, mobility was being replaced by a more sedentary adaptation in the development of numerous small villages, and the beginnings of a more complex society and economy began to emerge. During the Emergent period (A.D. 500 to historic contact), social complexity developed toward the ethnographic pattern of large, central villages where political leaders resided with associated hamlets and specialized activity sites. Artifacts associated with the period include the bow and arrow, small corner-notched points, mortars and pestles, and a diversity of beads and ornaments (Gerike *et al.*, 1996:3.11-3.17).

Ethnographic literature indicates that at the time of historic contact, the project area was within the territory of the Wappo-speaking people (Barrett, 1908:265; Sawyer, 1978:257). The territory of the Southern Wappo extended roughly from just north of the City of Napa northward to the City of St. Helena, encompassing the lower half of the Napa Valley and the fringing foothills and low mountains to the east and west. The Wappo economy was based on fishing, and hunting and gathering, with village community, or tribelet, members moving to various places within their territory to take full advantage of different resources as they became available. A typical Wappo tribelet inhabited a semi-permanent village from which

they made trips to temporary seasonal camps. Some Wappo tribelets defended their territory against trespassers, but land was not considered privately owned (Sawyer, 1978). The closest documented ethnographic village to the project area was *ka'imus*, an old village site described as being located at Yountville (Barrett, 1908; Sawyer, 1978:257). The Wappo culture was significantly disrupted through missionization by the Spanish starting in the early 1800s and later by Euro-American settlements. Some fought against the Spanish while others were drafted into labor gangs and then moved into the local mission at Sonoma between 1823 and 1824. In 1842, there were still 70 Indians at Sonoma Mission, some of which were Wappo. In 1856, a reservation was established in Mendocino and 240 Wappo were transferred from Russian River valley. Two years later, only 722 out of 1,500 Indians originally sent there remained and by 1867, the reservation was shutdown (Sawyer, 1978).

In 1836, 8,000 Indians were reported in Napa Valley (Yount, 1966:154-155), including one group of Miwok and four groups of Wappo. By 1855, Yount believed there were no more than 500 Wappo remaining in the valley. In 1860, 240 Wappo moved from the Russian River area above Healdsburg to the Mendocino reservation. By 1908, the estimated population of Wappo, Huchnom and Yuki combined was only 40, excluding the mixed but largely Yuki population of Round Valley. According to the 1910 census, however, 73 persons reported themselves as Wappo, three-fifths of them full-blood (Kroeber, 1925:221). A partial survey of the California census of 1970 indicated that there were an estimated 50 persons of Wappo parentage then living (Sawyer, 1978:258).

#### 4.3.1-2 HISTORICAL SETTING

The project area is located to the east of the Yajome Rancho Mexican land grant established in the early 1840s (Hoover *et al.*, 1990). Historical accounts of the area indicate that it contained only a few Mexican adobe buildings and ranching enclosures prior to the gold rush (Menefee, 1873). Afterwards, ranchers, farmers, and entrepreneurs quickly settled the area and the supporting infrastructures found in the area today.

The earliest sustained settlement of the region by Euro-Americans began in 1823 with the establishment of the Mission San Francisco Solano, Sonoma. After secularization of the missions, several Mexican land grants were applied for and approved. In 1836, George C. Yount (for whom Yountville is named), the first American settler in the Napa region, was granted Rancho Caymus, consisting of 11,814 acres in the heart of Napa Valley and located just west of the current project area (Hoover *et al.*, 1990). The name "Caymus" was derived from the nearby Wappo place name, *ka'imus*. Rector Canyon and Rector Reservoir, located just north of the project area, were named for a man who settled within the immediate area before 1947, "possibly John Potter Rector, whose name is recorded in the Great Register of Napa County, 1867-1868" (Gudde, 1969:264). The primary geographical focus of many of the ranchos in the Napa region was valley land, avoiding the rugged brush-covered nature

of the surrounding hills. The valley bottomlands provided places to grow crops, pasture animals, and exploit relatively reliable freshwater resources. Consequently, with the early focus being on valley lands, settlement of upland places, such as the project area, was often delayed – in some cases to the present.

Southwest of Atlas Peak in eastern Napa County is Foss Valley which was first settled in 1864 by William Clarke (ESA, 2006). By 1874, a Napa County land description stated that Foss Valley encompassed approximately 2,500 acres with William Clarke being the principle land owner. In 1879 Sebastian Dicky and Francis Varty purchased 2,380 acres from Clarke and established the Dicky-Varty Ranch, later named Circle S Ranch in the 1930s (ESA, 2006).

Francis Varty married Dicky's daughter, Emma, in 1875 and she joined her father in a business partnership that included what was to become Circle S Ranch. Dicky died in 1883, only four years after establishing the ranch, leaving the ranch co-owned by Varty and Dicky's widow, Elvira Dicky. By the turn of the century the ranch was being run by one of Dicky's grandchildren, Chester Curtis (ESA, 2006). Upon the death of Elvira Dicky in 1915 a long legal battle for ownership of the ranch ensued. Upon judgment, several Dicky-Varty family members sold their interests in Circle S Ranch to John Mount who, in turn, was forced to sell his interests during the Great Depression. In 1934, the ranch was sold to Will Day Skaggs of Alameda who renamed it Circle S Ranch. After several ownership changes the ranch was subdivided in 1995 into 16 smaller lots (ESA, 2006).

The Circle S Ranch has been in continuous agricultural use for the last 120 years (ESA, 2006). The primary activities include cattle grazing and hay production but vineyard, orchards and cord wood production also occurred. Circle S Ranch also contained a school servicing the Atlas Peak District and the 1.57 acre lot the school was located on was sold by Skaggs to the District in 1940. Circle S Ranch contains many thousands of linear feet of stone fences that date to the historic-period. These fences were built to contain livestock and demarcate property boundaries.

#### 4.3.1-3 *EXISTING ENVIRONMENT*

A cultural resource study was undertaken of the Circle S Ranch project area by Jay M. Flaherty (2008). The study was conducted from 2006 through 2008 and included a mixed strategy using pedestrian and All-Terrain-Vehicle survey. In addition to the survey, Flaherty undertook limited subsurface investigations in 2007 at prehistoric site P-28-001377 (BRM site 4), in order to make a site boundary determination. The information presented herein summarizes the work completed by Flaherty (2008).

A records search was conducted at the California Historical Resources Information System Northwest Information Center (NWIC) at Sonoma State University, Rohnert Park, California. The search was conducted to identify previous archaeological surveys and recorded sites within the project area and included, but was not limited to, a review of the following:

- National Register of Historic Places;
- California Register of Historic Places;
- California Historical Landmarks;
- California Points of Historical Interest listing (as listed in the Historic Property Directory);
- Historical maps;
- Ethnographic literature; and
- Other pertinent historic data.

The records search found that several cultural resource sites had been previously recorded and four cultural resource studies had been conducted within the project area prior to Flaherty's study (Tremaine and Lopez 1998; Eidsness 2002; ESA 2005; Martorana 2006). A 1998 study by Tremaine and Lopez identified a dry-laid rock wall (CA-NAP-995H) within the project area, as did a 2002 study by Eidsness (P-28-001194).

In 2005, a study by ESA identified and evaluated the historic significance of numerous buildings and structures at the Circle S Ranch (ESA 2005). The historic resources evaluation focused on the built environment associated with the Circle S Ranch, as well as historic features in the immediate vicinity. The evaluation considered 26 buildings and structures and concluded that 20 of them contribute to the significance of a historic district eligible to the National Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR) (ESA 2005:17). Significant resources identified at the Circle S Ranch by ESA include eight residences and associated outbuildings, six agricultural buildings and associated structures, three rock walls, a stone bridge, a concrete bridge/culvert, and the Milliken Creek Bridge.

A 2006 study by Mortorana conducted on a portion of the Circle S Ranch property identified three prehistoric archaeological sites consisting of bedrock mortar features, two of which have associated lithic scatters (P-28-001375 - referred to as BRM 1 in the Flaherty study; P-28-001376; and P-28-001377 - referred to as BRM 4 in the Flaherty study).

As a result of Flaherty's survey work, an additional 12 cultural resources were identified and recorded within the project area. Newly recorded resources include seven rock fences, a spring box, a rock alignment, the Atlas Peak School, and two prehistoric sites characterized by the presence of bedrock mortar features. A total of 24 cultural resources have been

identified within the project area. All identified cultural resources are summarized below (**Table 4.3-1**).

**TABLE 4.3-1**  
SUMMARY OF CULTURAL RESOURCES IN PROJECT AREA

Site Designation	Citation	Description
Circle S Ranch Buildings	Flaherty 2008; ESA 2005	Built environment of Circle S Ranch
Spring Box	Flaherty 2008	Concrete spring box
Historic Stone Bridge (Milliken Creek Bridge)	Flaherty 2008;ESA 2005	Cut stone bridge across Milliken Creek at Atlas Peak Road
Rock Bridge/Culvert	ESA 2005	Field stone bridge across Milliken Creek
Concrete Bridge/Culvert	ESA 2005	Crosses small tributary
Rock Alignment	Flaherty 2008	Semi circular rock alignment
Atlas Peak School	Flaherty 2008	Remnants of a historic school
P-28-001194 (RF 1 in Flaherty report)	Flaherty 2008; Eidsness 2002	Dry-laid rock wall
RF 2 (RW 3 in ESA report)	Flaherty 2008; ESA 2005	Dry-laid rock wall
RF 3	Flaherty 2008	Dry-laid rock wall
RF 4 (RW 2 in ESA report)	Flaherty 2008; ESA 2005	Dry-laid rock wall
RF 5	Flaherty 2008	Dry-laid rock wall
RF 6	Flaherty 2008	Dry-laid rock wall
RF 7	Flaherty 2008	Dry-laid rock wall
RF 8 (RW 1 in ESA report)	Flaherty 2008; ESA 2005	Dry-laid rock wall
RF 9	Flaherty 2008	Dry-laid rock wall
RF 10	Flaherty 2008	Dry-laid rock wall
RF 11	Flaherty 2008	Dry-laid rock wall
CA-NAP-995H / RF 12	Tremaine and Lopez 1998	Dry-laid rock wall
P-28-001375 / BRM 1	Flaherty 2008; Martorana 2006;	Bedrock mortar with lithic scatter
BRM 2	Flaherty 2008	Bedrock mortar
BRM 3	Flaherty 2008	Bedrock mortar
P-28-001376	Martorana 2006	Bedrock mortar
P-28-001377 / BRM 4	Flaherty 2008; Martorana 2006	Bedrock mortar with lithic scatter

### 4.3.2 PALEONTOLOGICAL SETTING

The presence of paleontological resources at any particular site is influenced by geological composition resulting from formation processes occurring over long periods of time. Fossils typically reside in sedimentary layers, and may or may not become mineralized dependent upon the mineral composition within their depositional environment.

As described in **Chapter 4.4**, the region's geologic history is characterized by old volcanic formations and tectonic uplifting of ancient sea floor deposits, which together form the Coast Ranges. These ancient geologic features are related to the Franciscan formation and often is expressed at the surface as a series of out-crops composed of sandstone, serpentine, chert, shale, greenstone, and metamorphic rocks. The hills that flank Napa Valley to the east are part of the Vaca Mountains and contain Sonoma Volcanics, which are a younger volcanic rock that formed from volcanic activity in the Sonoma/Napa region about three to

11 million years ago (USGS, 1963). In most locations, the older Franciscan Assemblage is present at a depth below the Sonoma Volcanics.

The geology of Foss Valley consists of shallow Quaternary surficial deposits that mantle the underlying Sonoma Volcanics bedrock. The surficial deposits are comprised of valley fill, alluvial fans, and modern floodplain deposits. The valley fill sediment consists of the latest-Holocene and modern channel deposits and floodplain overbank deposits. Fine-textured Holocene alluvial valley fill is located between the large alluvial fans and bedrock uplands surrounding the valley. The alluvial fans stretch across the south-facing flanks of the Circle S Ranch property uplands, almost entirely filling the main valley floor. The depth of alluvium is rather shallow, ranging from five to ten feet within the valley fill, and from five to 25<sup>+</sup> feet within the large alluvial fans. There are numerous bedrock outcrops within the main valley.

Significant fossil resources rarely occur in the Franciscan formation, due to the heavily deformed and metamorphosed nature of the materials. Few fossiliferous formations occur locally; two examples of fossil bearing deposits include the Wilson Grove formation in Sonoma County where invertebrate fossils have been reported and the petrified forest near Calistoga where Sonoma Volcanics buried an ancient forest.

A search of the University of California Paleontology Museum's (UCMP) database indicates that 97 paleontological specimens have been reported in Napa County (UCMP, 2008). Most of the reported specimens were found in contexts related to the Chico, Knoxville, Markley, and Paskenta formations, which do not occur onsite. Of the 97 specimens, only three were found in the Sonoma formation. Two of the fossils are Pliocene plant remains and the third is an invertebrate, presumably a marine shell.

Several sources were consulted to identify unique geologic formations within the project site. Sources reviewed include: the California Geotour Index maintained by the California Geologic Survey (CA Geologic Survey, 2007); California Geology (Harden, 2004); California Landscape (Hill, 1984); Roadside Geology of Northern and Central California (Alt and Hyndman, 2000); California Fossils for the Field Geologist (Schenck and Keen, 1955); and A Natural History of California (Schoenherr, 1992). A review of the above-referenced sources did not identify the presence of any unique geologic features within or in close proximity to the project site. Overall, the geology of the project site is typical of the region.

#### 4.3.2-1 PALEONTOLOGICAL SUMMARY

Despite a handful of invertebrate fossil specimens documented within the Sonoma Formation in Napa County, indicators of unique paleontological resources within the project site are absent in the sources consulted, and no such resources were observed in the course of a surface reconnaissance survey by Flaherty (2008). The geologic formation

upon which the project site is located has produced few significant paleontological specimens of scientific consequence and thus would not be likely to yield unique paleontological resources. Furthermore, no unique geologic features are known to exist within the project site.

### 4.3.3 REGULATORY FRAMEWORK

#### 4.3.3-1 CULTURAL RESOURCES

Cultural resources are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, and/or scientific importance. Numerous laws, regulations, and statutes at the state and local level govern archaeological and historic resources deemed to have scientific, historic, or cultural value. The pertinent regulatory framework of these laws is summarized below.

#### **California Environmental Quality Act (CEQA)**

CEQA requires that, for projects financed by, or requiring the discretionary approval of public agencies in California, the effects that a project has on historical and unique archaeological resources must be considered (Public Resources Code [PRC] Section 21083.2). Historical resources are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, or scientific importance (PRC Section 50201). The CEQA Guidelines (Section 15064.5) define three cases in which a property may qualify as a historical resource for the purpose of CEQA review:

- A. The resource is listed in or determined eligible for the listing in the California Register of Historical Resources (CRHR). Section 5024.1 defines eligibility requirements and states that a resource may be eligible for inclusion in the CRHR if it:
  1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
  2. Is associated with the lives of persons important in our past;
  3. Embodies the distinctive characteristics of a type, period, region, or method of construction, represents the work of an important creative individual, or possesses high artistic values; or
  4. Has yielded, or may be likely to yield, information important in prehistory or history.



- B. Properties must retain integrity to be eligible for listing on the CRHR. Properties that are listed in or eligible for listing in the NRHP are considered eligible for listing in the CRHR, and thus are significant historical resources for the purpose of CEQA (PRC section 5024.1(d)(1)).
- C. The resource is included in a local register of historic resources, as defined in section 5020.1(k) of the PRC, or is identified as significant in a historical resources survey that meets the requirements of section 5024.1(g) of the PRC (unless the preponderance of evidence demonstrates that the resource is not historically or culturally significant).
- D. The lead agency determines that the resource may be a historical resource as defined in PRC section 5020.1(j), 5024.1, or significant as supported by substantial evidence in light of the whole record.

PRC Section 21083.2 governs the treatment of unique archaeological resources, defined as “an archaeological artifact, object, or site about which it can be clearly demonstrated” as meeting any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
2. Has a special and particular quality such as being the oldest of its type or the best example of its type.
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

### **Local Regulations, Goals and Policies**

#### ***Napa County General Plan – Community Character Element***

The General Plan identifies the following goal and policies to preserve and enhance cultural resources in Napa County:

Goal CC-4: Identify and preserve Napa County’s irreplaceable cultural and historic resources for present and future generations to appreciate and enjoy.

Policy CC-19: The County supports the identification and preservation of resources from the County’s historic and prehistoric periods.

Policy CC-21: Rock walls constructed prior to 1920 are important reminders of the County’s agricultural past. Those walls which follow property lines or designated scenic roadways shall be retained to the extent feasible and modified only to permit required repairs and allow for openings necessary to provide for access.

Policy CC-23: The County supports continued research into and documentation of the county's history and prehistory, and shall protect significant cultural resources from inadvertent damage during grading, excavation, and construction activities.

Policy CC-30: Because the County encourages preservation of historic buildings and structures in place and those buildings and structure must retain "integrity" to be considered historically significant, the County shall discourage scavenging of materials from pre-1920 walls and other structures unless they are beyond repair.

### ***Napa County Code 18.04.010***

Under Title 18, Zoning of the Napa County Code, the Board of Supervisors made several findings with respect to the zoning ordinance. One of those findings (F.15) relates to the objective of preserving sites and structures of a special historical, archaeological, or architectural character and to provide for the maintenance and development of appropriate settings for such resources.

#### ***4.3.3-2 PALEONTOLOGICAL RESOURCES***

Paleontological resources are the traces or remains of prehistoric plants and animals. Such remains often appear as fossilized or petrified skeletal matter, imprints or endocasts, and reside in sedimentary rock layers. Paleontological resources are protected by state regulations and policies including CEQA, and the Public Resources Code (PRC).

#### **California Environmental Quality Act**

CEQA provides protection for unique paleontological resources and unique geologic features, and requires that impacts to such resources must be considered in the project review process. The Act distinguishes between ubiquitous fossils that are of little scientific consequence, and those which are of some importance by providing protection for the latter. While CEQA does not precisely define unique paleontological resources, criteria established by the Society of Vertebrate Paleontology (SVP) provide guidance. The SVP defines a significant paleontological resource as one which meets one or more of the following criteria (SVP, 1995):

- Provides important information shedding light on evolutionary trends and/or helping to relate living organisms to extinct organisms;
- Provides important information regarding the development of biological communities;
- Demonstrates unusual circumstances in the history of life;
- Represents a rare taxon or a rare or unique occurrence, is in short supply and in danger of being destroyed or depleted;
- Has a special and particular quality, such as being the oldest of its type or the best available example of its type; or
- Provides important information used to correlate strata for which it may be difficult to obtain other types of age dates.

CEQA similarly fails to precisely define a unique geologic feature. For the purpose of this analysis, a unique geologic feature is defined as a resource or formation that:

- Is the best example locally or regionally;
- Embodies distinct characteristics of a geologic principal that is exclusive locally or regionally;
- Provides a key piece of geologic information important in geology or geologic history;
- Is a type locality of a geologic feature;
- Contains a mineral not known to occur elsewhere locally or regionally; or
- Is used repeatedly as a teaching tool.

### California Public Resources Code

Section 5097.5 of the PRC prohibits “knowing and willful” excavation, removal, destruction, injury, or defacement of paleontological resources on public lands without prior permission from the appropriate agency. Public lands include those “owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.” If paleontological resources are identified within a given project area, the lead agency must take those resources into consideration when evaluating project impacts. The level of consideration may vary with the importance of the resource in question.

## 4.3.4 IMPACTS AND MITIGATION MEASURES

### 4.3.4-1 SIGNIFICANCE CRITERIA

Based on CEQA *Guidelines* Section 15064.5 and Appendix G of the CEQA *Guidelines*, a project would have significant adverse impacts to cultural resources if the project would:

- Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 (a);
- Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5 (c);
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or
- Disturb any human remains, including those interred outside of formal cemeteries.

Any one of the above-cited impacts to a historical resource, as defined by public resources code (PRC) Section 50201, constitutes a substantial adverse change pursuant to the California Environmental Quality Act (CEQA). A substantial adverse change to a historical resource is considered a significant impact on the environment.

#### 4.3.4-2 IMPACTS AND MITIGATION MEASURES

This section identifies impacts to cultural and paleontological resources, which could result from construction, operation, or maintenance of the project. Impacts were analyzed by reviewing various sources regarding the nature and location of cultural and paleontological resources located within the project site, through a field examination of the known resources (Flaherty 2008), and by overlaying project components on maps of the resources. State impact significance criteria were applied to each known resource relative to the project design.

All cultural resources identified within the project boundary are summarized below (**Table 4.3-2**; the cultural resources (with the exception of the prehistoric sites) are shown in **Figure 4.3-1**), along with recommended mitigation measures.

**TABLE 4.3-2**  
SUMMARY OF CULTURAL RESOURCES AND MITIGATION RECOMMENDATIONS












Site Designation	CRHR Status	Potential Impact	Recommended Mitigation
Circle S Ranch Buildings	Recommended Eligible	No direct impact	Avoidance
Spring Box	Not Evaluated	No direct impact (adjacent to proposed rock disposal area west of proposed Block 12A)	Avoidance
Historic Stone Bridge (Milliken Creek Bridge)	Recommended Eligible	No direct impact	Avoidance
Rock Bridge / Culvert	Recommended Eligible	No direct impact	Avoidance
Concrete Bridge / Culvert	Recommended Eligible	No direct impact	Avoidance
Rock Alignment	Not Evaluated	No direct impact (adjacent to proposed Block 26)	Avoidance
Atlas Peak School	Not Evaluated	No direct impact	Avoidance
P-28-001194 (RF 1)	Recommended Eligible	Within proposed Blocks 4 and 5; three proposed rock wall openings	Avoidance

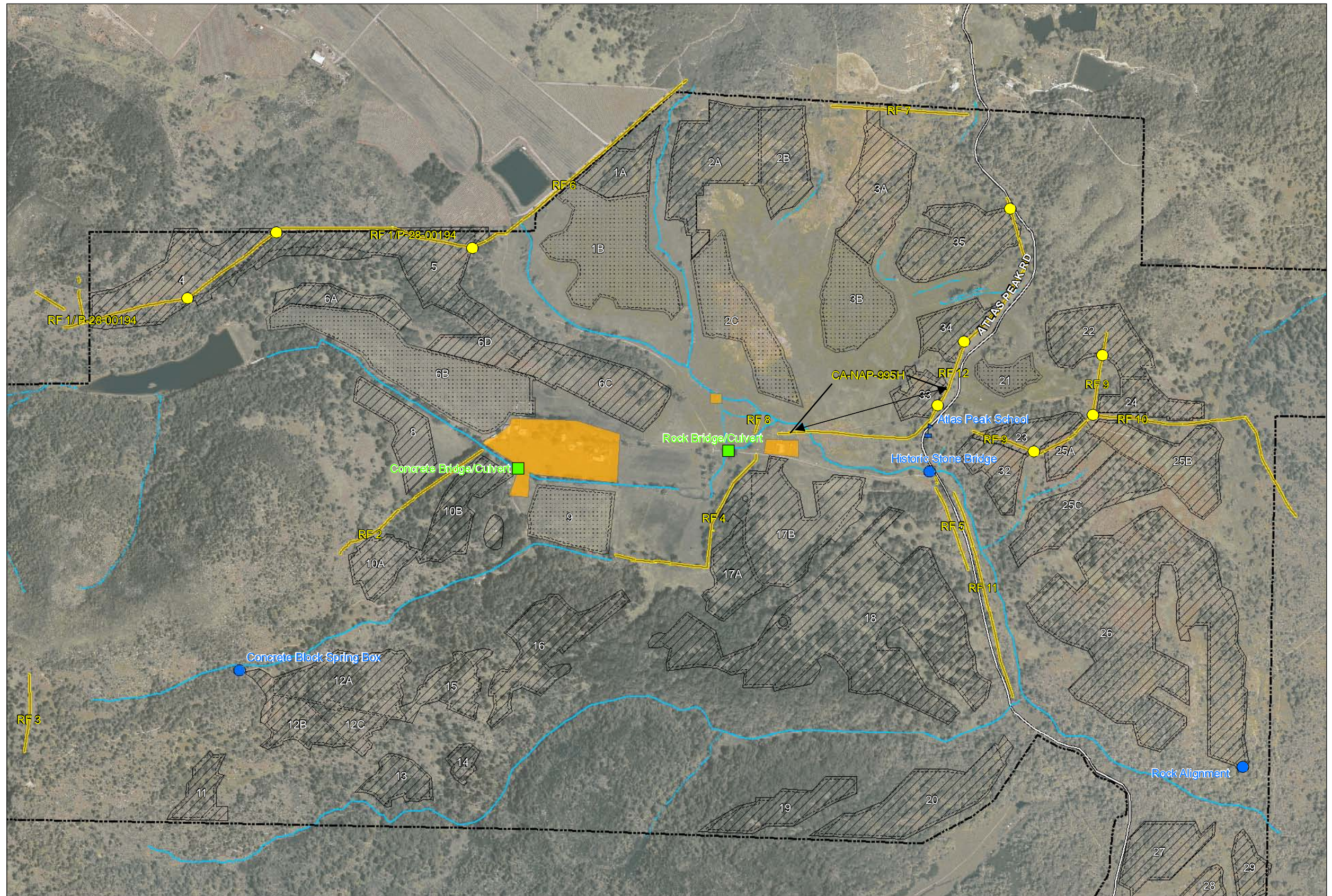
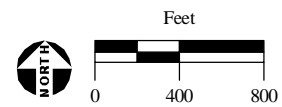
Site Designation	CRHR Status	Potential Impact	Recommended Mitigation
RF 2	Recommended Eligible	No direct impact	Avoidance
RF 3	Recommended Eligible	No direct impact	Avoidance
RF 4	Recommended Eligible	No direct impact (adjacent to proposed rock disposal area west of proposed Block 17B)	Avoidance
RF 5	Recommended Eligible	No direct impact	Avoidance
RF 6	Recommended Eligible	No direct impact (adjacent to proposed Blocks 1A and 1B)	Avoidance
RF 7	Recommended Eligible	No direct impact (on property line adjacent to proposed Block 3A)	Avoidance
RF 8	Recommended Eligible	No Direct Impact	Avoidance
RF 9	Recommended Eligible	Within proposed Blocks 22, 23 & 25A and adjacent to proposed Blocks 24 & 32; three proposed rock wall openings	Avoidance
RF 10	Recommended Eligible	No direct impact (adjacent to proposed Blocks 24 and 25B)	Avoidance
RF 11	Recommended Eligible	No direct impact	Avoidance
CA-NAP-995H / RF 12	Recommended Eligible	Within and adjacent to proposed Blocks 33, 34 and 35; three proposed rock wall openings	Avoidance
P-28-001375 / BRM 1	Not Evaluated	Within proposed block	Avoidance
BRM 2	Not Evaluated	No direct impact	Avoidance
BRM 3	Not Evaluated	No direct impact	Avoidance
P-28-001376	Not Evaluated	No direct impact (adjacent to proposed Blocks 6B, 6C, 6D)	Avoidance
P-28-001377 / BRM 4	Not Evaluated	Within proposed block	Avoidance

**Impact 4.3-1:** Grading activities and planting of new vineyard within the boundaries of identified resources would negatively impact these cultural resources. This is a potentially significant impact.

**Mitigation Measure 4.3-1:** A total of 24 cultural resources have been identified within the Circle S Ranch project area (**Figure 4.3-1** (excludes prehistoric resources); a figure depicting all resource locations is on file with Napa County). Sixteen of these resources have been evaluated and recommended eligible to the National and/or California Registers, while the eligibility status of the balance remains undetermined. As such, all cultural resources listed in **Table 4.3-2** are considered significant for management purposes and are treated accordingly. Therefore, all cultural resources listed in the above referenced table must be avoided by all ground disturbing activities during project implementation and operation with a permanent five meter (16 foot) buffer around the perimeter, with the exception of the rock walls (RF 1 through RF 12). The rock walls shall be avoided by all

**LEGEND**

-  Property Boundary
-  Historic Site
-  Historical Complex
-  Existing Rock Wall
-  Proposed Rock Wall Opening of 20-feet
-  Bridge/Culvert
-  USGS Streams
-  Other Drainages
- Proposed Vineyard Blocks**
-  Vineyard Avenues
-  Slopes Greater Than 5% and Included in ECPA
-  Slopes Less Than 5% and Not Included in ECPA



**Figure 4.3-1**  
Cultural Resources (excludes pre-historic sites)

ground disturbing activities during project implementation and operation with a permanent 10 foot buffer around the perimeter (including vineyard avenues), with the exception of the nine areas identified in **Figure 4.3-1** where rock walls would be opened. The openings shall be limited to 20 feet each and shall provide necessary access consistent with General Plan Policy CC-21. Erosion Control Plan P06-01508-ECPA shall be revised to avoid all resources prior to County approval. The Applicant shall install and maintain protective fencing along the outside of the buffer to ensure protection during construction. Implementation of this mitigation measure would reduce impact to a less-than-significant level.

**Impact 4.3-2:** Planting of new vineyard has the potential to negatively impact previously unknown cultural resources within the project area. This is a potentially significant impact.

**Mitigation Measure 4.3-2:** There is a possibility that subsurface archaeological deposits may exist within proposed vineyard areas, as archaeological sites may be buried with no surface manifestation, or may be obscured by vegetation. In accordance with CEQA *Guidelines* Section 15064.5 (f), should any previously unknown prehistoric or historic resources, such as, but not limited to, obsidian and chert flaked-stone tools or toolmaking debris; shellfish remains, stone milling equipment, concrete, or adobe footings, walls, filled wells or privies, deposits of metal, glass, and/or ceramic refuse be encountered during onsite construction activities, earthwork within 100 feet of these materials shall be stopped and the owner shall consult with a professional archaeologist. Once the archaeologist has had the opportunity to evaluate the significance of the find and suggest appropriate mitigation measures, as necessary, said measures shall be carried out prior to any resumption of related ceased earthwork. All significant cultural resource materials recovered shall be subject to scientific analysis, professional museum curation, and a report prepared by the qualified archaeologist according to current professional standards.

Implementation of this mitigation measure would reduce impact to a less-than-significant level.

**Impact 4.3-3:** Planting of new vineyard blocks could result in the discovery and disturbance of unknown human remains.

While unlikely, there is always the possibility that ground disturbing activities such as earth removal, rock removal and trenching for irrigation lines could result in the discovery and disturbance of unknown human remains in the project area by disturbing both surface and subsurface soils. This is a potentially significant impact.

**Mitigation Measure 4.3-3:** In the event that human remains are discovered, the provisions of the California Health and Safety Code Section 7050.5 (b) shall be followed. The Napa County Coroner shall be contacted within 24 hours of the find. Upon recognizing the remains as being Native American in origin, the Coroner shall be responsible for contacting the Native American Heritage Commission (NAHC) within 24 hours. The NAHC has various powers and duties to provide for the ultimate disposition of any Native American remains, as does the assigned Most Likely Descendant (MLD).

Implementation of this mitigation measure would reduce impact to a less-than-significant level.

**Impact 4.3-4:** Construction of proposed project components has the potential to destroy unknown, unique paleontological and geological resources.

No unique paleontological or geological resources are known to exist within the project site. As discussed in **Section 4.3.2**, geologic formations that underlie the project site have a low probability of containing paleontological resources. Therefore, no impacts are expected. However, there is a possibility that unknown paleontological resources would be encountered during construction activities. Continued construction upon exposed paleontological materials would likely cause destruction of these resources. This is a potentially significant impact that would be reduced to a less-than-significant level with implementation of **Mitigation Measure 4.3-4** below.

**Mitigation Measure 4.3-4:** In the event that any paleontological resources are discovered during construction-related earth-moving activities, all work within 50 feet of the resources shall be halted and a qualified paleontologist shall be consulted to assess the significance of the find. If any find is determined to be significant by the qualified professional, then appropriate agency and project representatives and the qualified paleontologist shall meet to determine the appropriate course of action. All significant cultural or paleontological materials recovered shall be subject to scientific analysis, professional museum curation, and a report prepared by the qualified paleontologist according to current professional standards.



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## 4.4 GEOLOGY AND SOILS

### 4.4.1 SETTING

#### 4.4.1-1 GEOLOGY AND TOPOGRAPHY

The Circle S Ranch is located within the California Coastal Ranges, which are formed on marine sedimentary and volcanic rocks of the Franciscan Assemblage (a local formation). These rocks occur in northwest-trending ridges and valleys and extend along the Pacific Coast from Oregon to Southern California. The Franciscan Assemblage rocks are among the oldest in the Napa Valley region. The hills that flank Napa Valley to the east are part of the Vaca Mountains and contain Sonoma Volcanics, which are a younger volcanic rock that formed from volcanic activity in the Sonoma/Napa region about three to 11 million years ago (USGS, 1963). In most locations, the older Franciscan Assemblage is present at a depth below the Sonoma Volcanics. The Sonoma Volcanics are subdivided into various volcanic rocks including rhyolite (fine-grained volcanic rock), tuff (cemented volcanic ash) and other pyroclastic (explosive or aerially ejected volcanic material) rocks.

Recent study of Napa Valley geology suggests that a series of mega-landslides occurred less than a million years ago along the margin of the Vaca Mountains. The landslides were a result of tectonic compression and uplift associated with the growth of the Coast Ranges. According to this hypothesis, the steep front of the Vaca Mountains, within Milliken Reservoir watershed and adjacent watersheds (east of Yountville), consists of a group of landslide scarps while the flat surfaces in the hills are down-dropped stair-step features related to the tectonic activity along the margin of the Vaca Mountains. The Circle S Ranch property, specifically its portion of the Foss Valley, is located on the highest of the stair-step plateaus.

Elevations at the project site range from 1,340 feet above mean sea level (msl) to 2,627 feet msl. The north-central portion of the project site is located in the southern end of the Foss Valley. The Foss Valley ranges in elevation from 1,245 feet msl to 1,575 feet msl. The Atlas Peak-Foss Valley tectonic lineament zone trends in the northwestern direction across the northern section of the Foss Valley. This zone is a northward extension of the potentially active, dextral Concord-Green-Valley fault.

The Foss Valley consists of shallow Quaternary surficial deposits that mantle the underlying Sonoma Volcanics bedrock. The surficial deposits are comprised of valley fill, alluvial fans, and modern floodplain deposits. The valley fill sediment consists of the latest-Holocene and modern channel deposits and floodplain overbank deposits. Fine-textured Holocene alluvial valley fill is located between the large alluvial fans and bedrock uplands surrounding the valley. The alluvial fans stretch across the south-facing flanks of the Circle S Ranch

property uplands, almost entirely filling the main valley floor. The fans vary in texture from fine-grained to coarse-grained. Due to the nature of the fan alluvium, the fans are naturally subject to channel incision and/or gulying. The alluvial fans appear to exert a fundamental control of the course, location, and the streambank stability of Milliken Creek within Foss Valley. Based on stream bank textures of Milliken Creek and its fan tributaries, the alluvial mantle within the valley fill is 2.5 feet thick on average. Based on a seismic refraction survey conducted at the project site by (Advanced Geologic Services, 2005), the alluvial fill/fan depth-to-bedrock is rather shallow, ranging from five to ten feet within the valley fill, and from five to 25<sup>+</sup> feet within the large alluvial fans. There are numerous bedrock outcrops within the main valley, some of which have been identified to host vernal pools/swales (**Figure 4.2-2**) that naturally inhibit channel incision. A large bedrock outcrop occurs above the bridge crossing with Atlas Peak Road, by the property access gate (Trso, 2008). It should be noted that these rock outcrops were not mapped in the Napa County Baseline Data Report because most rock outcrops in Napa County were generally below the minimum map unit of 2.5 acres used in the Baseline Data Report; and therefore, are not included in the calculations of area removed in **Table 4.2-2**; acreages of these areas estimated in the Biological Resources chapter, **Section 4.2.2** total approximately 19 to 20 acres.

The project site is located within the Milliken Reservoir watershed, a Napa County designated Sensitive Domestic Water Supply Drainage, which provides domestic water supplies to the City of Napa. The Circle S Ranch property consists of 25.9 percent of the Milliken Creek watershed area. Slopes on the project site range from flat in the valley areas to over 30 percent in the upland areas. From numerous observations of runoff during storm events (Trso, 2008), the area of Foss Valley southwest of Atlas Peak Road is disconnected from the lower portions of the watershed (including Milliken Reservoir) for all gravel, sand, and a fraction of the silt load. Instead, this sediment is naturally stored within the valley floor west of Atlas Peak Road. In this area, the alluvial fans and valley fill are natural and permanent sediment storage sites, which efficiently trap sediment supply from the uplands within their unconfined stream channels and seasonal wetlands. The remainder of the property area is connected to the lower reaches of the Milliken Reservoir watershed for surface runoff and sediment yield.

#### 4.4.1-2 SOILS

Soil types and their characteristics in the Napa Valley subregion are controlled in part by their location in either valleys or hillsides. The surficial geologic deposits of the Napa Valley subregion consist of widespread, locally deep alluvium, and on the flanking ridge systems generally discontinuous deposits of colluvium, soil creep, and landslide deposits. The valley alluvium consists predominantly of alluvial fan, stream channel, flood plain, and terrace deposits. The soils in Napa Valley are generally very deep and have high potential

productivity, and are often used for vineyards, orchards, and pastures. The colluvial and landslide deposits are typically more heterogeneous in composition and consist of various combinations of mostly unconsolidated soil and rock fragments. The density of known landslide occurrence in the ridge systems of the Napa Valley subregion is variable and ranges from mostly low to moderate to locally high. Most commonly they are combined slump-earthflows and less commonly very rapid failures such as debris flows, mudflows, rock falls, and toppling (Napa County, 2005).



















Soils on the project site are shown in **Figure 4.4-1** and their characteristics pertaining to erosion and hydrologic factors are outlined in **Table 4.4-1**. The soils in the upland areas of the project site are categorized as 100 and 102 Aiken loam, 151 and 152 Hambright-Rock Outcrop complex, and limited outcrops of 154 Henneke gravelly loam. The valley floor soils are 105 Bale clay loam, and the alluvial fan soils are 110 Boomer-Forward-Felta complex. The soils on the upland hillsides are up to three feet deep, although extensive, soil-free, barren bedrock outcrops exist on the upland hillsides, east of Atlas Peak Road. Under current conditions, the ground cover ranges from 30 percent to 70 percent within the proposed vineyard areas and an average of 50 percent within the overland flow areas (those areas where overland flows are generated, usually near drainages) of onsite drainages, including Milliken Creek.

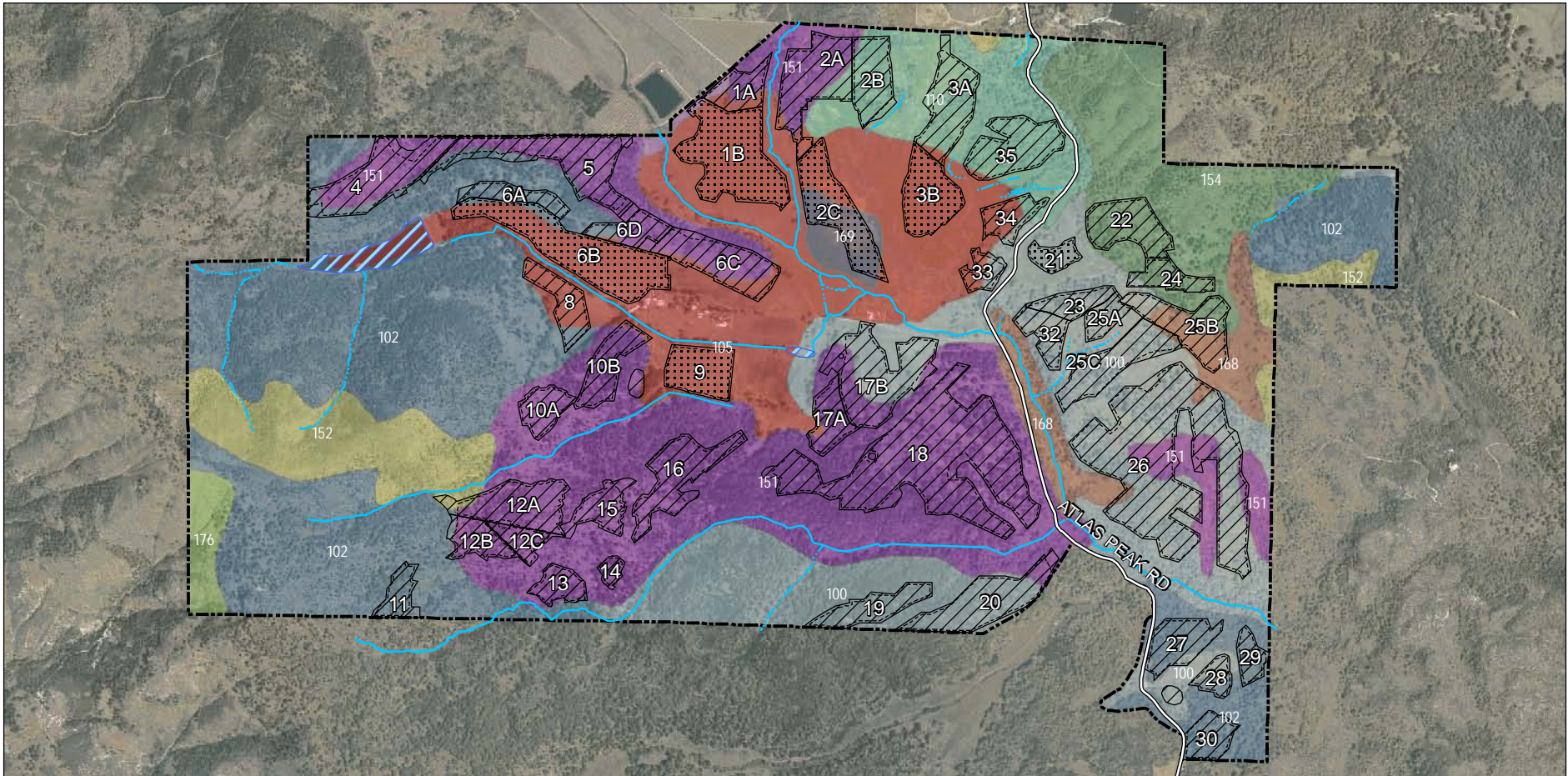
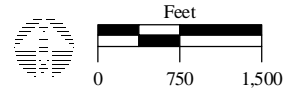
**TABLE 4.4-1**  
CHARACTERISTICS OF SOILS FOUND AT CIRCLE S RANCH

Soil	Slope (%)	Landform	Drainage	Surface Runoff	Erosion <sup>1</sup>
100 - Aiken Loam	2 to 15	Hillslopes	Well drained	Medium	Slight
102 - Aiken Loam	30 to 50	Hillslopes	Well drained	High	Severe
104 - Bale Clay Loam	0 to 2	Alluvial fans, floodplains	Somewhat poorly drained	Low	Slight
105 - Bale Clay Loam	2 to 5	Terraces, floodplains	Somewhat poorly drained	Low	Slight
110 - Boomer-Forward-Felta Complex	30 to 50	Hillslopes, terraces	Well drained	Medium-high	Severe
151 - Hambright Rock-Outcrop Complex	30 to 75	Plateaus, hills	Well drained	High	Moderate
152 - Hambright Rock-Outcrop Complex	2 to 30	Hills	Well drained	High	Very severe
154 - Henneke Gravelly Loam	30 to 75	Hills	Excessively drained	High	Very severe
168 - Perkins Gravelly Loam	2 to 5	Terraces	Well drained	Medium	Slight
169 - Perkins Gravelly Loam	5 to 9	Terraces	Well drained	Medium	Slight
176 - Rock Outcrop-Hambright Complex	50 to 75	Hills	Well drained	High-very high <sup>2</sup>	Not Rated <sup>2</sup>

<sup>1</sup> Erosion hazard represents the potential for erosion of soils after disturbance activities. A rating of "slight" indicates that erosion is unlikely under ordinary climatic conditions; "moderate" indicates that some erosion is likely and that erosion-control measures may be needed; "severe" indicates that erosion is very likely and that

**LEGEND**

 Property Boundary	<b>Soils</b>	 152 Hambrigh Rock-Outcrop Complex, 30 to 75% Slopes	<b>Proposed Vineyard Blocks</b>
 Existing Reservoir	 100 Aiken Loam, 2 to 15% Slopes	 151 Hambrigh Rock-Outcrop Complex, 2 to 30% Slopes	 Slopes Greater Than 5% and Included in ECPA
 USGS Streams	 102 Aiken Loam, 30 to 50% Slopes	 154 Henneke Gravelly Loam, 30 to 75% Slopes	 Slopes Less Than 5% and Not Included in ECPA
 Other Drainages	 104 Bale Clay Loam, 0 to 2% Slopes	 168 Perkins Gravelly Loam, 2 to 5% Slopes	 Vineyard Avenues
	 105 Bale Clay Loam, 2 to 5% Slopes	 169 Perkins Gravelly Loam, 5 to 9% Slopes	
	 110 Boomer-Forward-Felta Complex, 30 to 50% Slopes	 176 Rock Outcrop-Hambrigh Complex, 50 to 75% Slopes	



**Figure 4.4-1**  
Soils Map

erosion-control measures are advised; and “very severe” indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

<sup>2</sup> Rock outcrop 60 percent

Source: USDA, 1978

#### 4.4.1-3 *SEDIMENT EROSION AND YIELD*

##### **Sediment Erosion**

Sediment erosion is the mechanical breakdown of rock material and the removal of the resultant materials, such as soil and rock particles, by water or wind. The potential for erosion of a particular area is dependent upon a variety of factors including the geology, slope, vegetation cover, hydrology, precipitation and the intensity of storm events. Shallow soil creep is the slow downward movement of soil and loose rock on slopes. On steep hillside areas the potential for erosion is greater and rilling, rutting, and damaging gully systems can form. Along many natural drainage courses on both hillsides and valley areas, stream and river flow can result in bank erosion. In overland flow areas (OFAs) sediment is easily dislodged and transported to receiving waters. Large-scale erosion occurs from mass wasting including shallow and deep-seated landsliding, particularly from high intensity storm events.

The majority of sediment supply to the project site watercourses originates from the steep upland areas onsite and offsite within the crest of the Vaca Mountains and the alluvial reaches of the low-gradient watercourses onsite. The dominant sediment-producing processes within the project site are characterized by natural shallow soil creep within upland areas, hillside and streamside surface erosion within upland areas and the valley floor, and alluvial streambank mass wasting within the alluvial valley floor. The project site is comprised of 259.1 acres of streamside OFAs and 1,334.7 acres of disconnected hillside areas (Trso, 2008: Appendix G). Surface erosion of upland hillslopes is expected to be substantial due to the low infiltration rate of the underlying soils. According to vineyard plot studies in the Napa River Basin, the annual surface erosion from hillside vineyards with limited straw or cover crops ranges from 2.3 to 23 tons per acre (tons/acre) (Napa County RCD, 1997). Notable amounts of sheetwash and rilling may also occur during large-magnitude storms due to the hydrologic effects of wildfires or vegetation removal. In June 1981, the Milliken Reservoir watershed was burned within two days by the Atlas Peak fire. Large rainstorms that sweep across the Napa River watershed periodically induce shallow and deep-seated landsliding. Landsliding is further discussed in the Geologic Stability section below.

Currently, hillside surface erosion is the most significant sediment source and delivery mechanism, on the property shallow soil creep is the second most significant sediment



source and delivery mechanism, and bank erosion is the third most significant sediment source and delivery mechanism. Road-related erosion is an insignificant sediment source and sediment delivery mechanism on the project site (Trso, 2008). The access road exhibits non-erosive conditions, and is hydrologically disconnected from Milliken Creek. Similarly, the rocky and unpaved roads and trails onsite exhibit low erosion rates (Trso, 2008).

### **Sediment Yield**

Sediment yield is the amount of sediment that has been produced by erosion and conveyed by drainages to a particular point. Watershed-wide sediment yields are generally calculated from the sediment accumulation rates in reservoirs or from direct measurements of suspended sediment and bedload in streams. According to accumulation surveys conducted by Water, Engineering and Technology, Inc. (1990) and Napolitano et al. (2006), in reservoirs that drain the watersheds underlain by Sonoma Volcanic rocks and that exhibit the same land use and wildfire history as the Milliken Reservoir watershed, the average annual long-term sediment yield is estimated to range from 0.3 to 1.3 tons/acre. Such sediment yield rates are low relative to other areas in Napa Valley. These rates are associated with the watersheds with limited or no past land use, and where deep-seated landslides or large canyons are absent.

A recent investigation of sediment accumulation in Milliken Reservoir (Napolitano et al, 2006) estimated that the rate of sediment yield from the entire Milliken Reservoir watershed draining to the reservoir, over the period 1926 to 2003, was about 1,850 tons per year (tons/year). About 15 square kilometers (km<sup>2</sup>) of the drainage area are located upstream from the canyon of Milliken Creek, in the Foss Valley (about 5 km<sup>2</sup>) and other smaller low-relief adjacent areas (10 km<sup>2</sup>). Due to the almost total disconnectivity of Foss Valley from the remaining 10-km<sup>2</sup> canyon portion of the Milliken Reservoir watershed, the annual rate of sediment supply to the reservoir is approximately 0.6 tons/acre per year (tons/acre-yr) (see **Figure 4.4-3** in **Impact 4.4-1** below; Trso, 2008).

### **Sediment Trapping**

Not all sediment produced by erosion is delivered to receiving waters. Some sediment is trapped in-route by sedimentation in onsite features. Sediment trapping on the project site occurs in wetlands and unconfined channels of the alluvial fan and valley fill areas, the Circle S Ranch reservoir, and the onsite stockpond. These features significantly reduce sediment supplies in the northern portion of the project site, as well as sediment generated from the neighboring (to the north) Atlas Peak Vineyard property that is transported to the Circle S Ranch. Sediment supplies within the southern portions of the project site and adjacent offsite areas are not trapped by any of the onsite watercourses, and are transported offsite. The sediment storage capacity of the 131-acre foot Circle S Ranch

reservoir was estimated to be about 1.8 tons/acre-year during the period 1969 to 2007 (Trso, 2008).

#### 4.4.1-4 GEOLOGIC STABILITY

##### **Landsliding**

According to a review of available United States Geologic Survey (USGS) and California Geological Survey (CGS) landslide maps, there are no active-deep seated landslides, shallow landslides, or hillside gullies on the project site. A dormant landslide has been mapped by USGS near the south-central portion of the project site, and field reconnaissance identified an ancient landslide deposit that characterizes the entire Foss Valley floor (Trso, 2008).

These findings are supported by the geotechnical investigation completed by Trso (2008), which relied on a review of the most recent literature and the SHALSTAB model; this model is used to predict shallow landslide hazards. SHALSTAB is based on the observation that shallow landslides tend to occur in topographic hollows where shallow subsurface flow convergence leads to increased soil saturation, increased pore pressures, and reduced shear strength. The investigation revealed no hillside gullies or shallow landslides within the non-canyon portion of the property. According to the SHALSTAB model, there are 28 steep headwall bedrock hollows, which are predicted to be highly unstable. These bedrock hollows cover a combined area of 32 acres in the lower crest of the Vaca Mountains in the northeast of the project site and near the drainage divide between the Milliken Reservoir and Soda Creek watersheds in the southwest of the property. However, in total, 98.2 percent of the project site is predicted to be unconditionally stable for shallow landslide hazards.

Napa County prepared Geographic Information System (GIS) maps of landslide deposits and areas of potential landslide hazards for the Napa County Environmental Baseline Data Report (Napa County, 2005). The data was collected from the interpretation of USGS aerial photographs from sources published over several decades. The GIS maps identified that in the south-central portion of the Circle S Ranch one large landslide deposit and several small areas of potential landslide hazards exist.

##### **Seismicity**

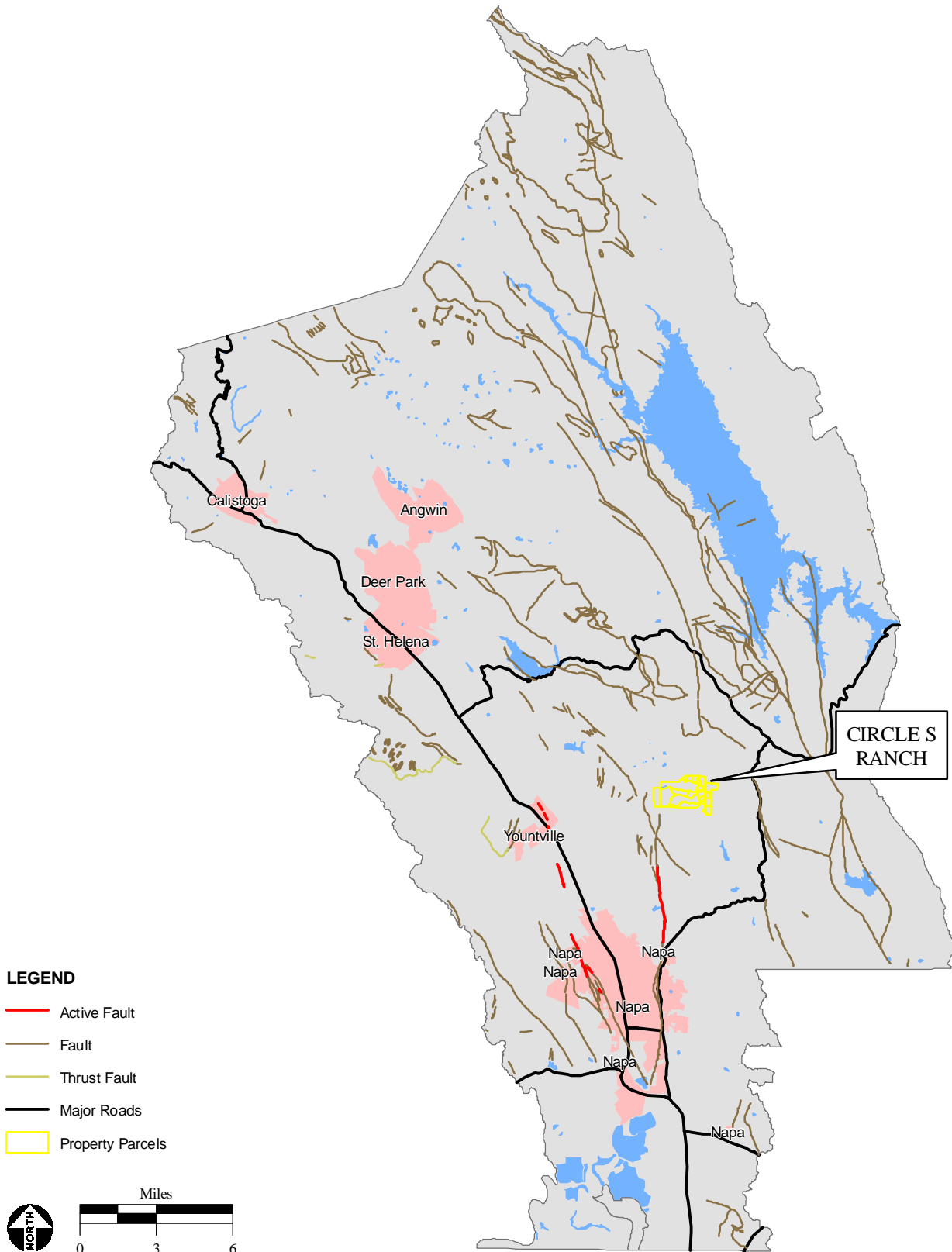
###### *Seismic Potential*

Numerous faults exist throughout the Bay Area of Northern California where Circle S Ranch is located. The majority of active faults within the Bay Area are components of the San Andreas Fault zone, a broad north-northwest trending system that extends along coastal California. An active fault is a fault that shows displacement within the last 11,000 years,

and therefore, is considered more likely to generate a future earthquake than a fault that has not shown signs of recent activity. A fault that the CGS determines to be sufficiently active and well-defined is zoned as an earthquake fault zone according to mandates of the Alquist-Priolo Earthquake Fault Zoning Act of 1972. These earthquake faults zone areas are located along active faults that are susceptible to the hazard of surface fault rupture.

The project site is located south of the Atlas Peak-Foss Valley tectonic lineament zone, which is a tectonic structure associated with the Concord-Green-Valley fault. Within Napa County a large number of faults have been mapped, but the CGS has designated only a very small number of these faults as active (**Figure 4.4-2**). Active faults in Napa County include the West Napa fault, the Green Valley fault, and the Hunting Creek fault. There are no active geologic faults associated with the Atlas Peak-Foss Valley lineament zone. Portions of the Green Valley and Hunting Creek faults are zoned as fault rupture hazards by the Alquist-Priolo Act (CDMG, 1997). Further investigations are underway on the West Napa fault, particularly the northern part, where portions are believed to be sufficiently active. Since the project site is not located within any Alquist-Priolo Special Studies Zones and there are no active faults onsite, there is little potential hazard from rupture along an active fault trace. However, the project site is susceptible to ground shaking from these faults and other major faults in the Bay Area. According to USGS (2004 and 2006), the faults mapped near the project site show activity prior to 700,000 years ago. About 12 earthquakes with magnitudes ranging from 2.0 to 4.0 on the Richter scale occurred in Foss Valley over the last 35 years (USGS, 2004), some of which were along the trace of Upper Milliken Creek, between Atlas Peak Road and Milliken Canyon. Further, the San Andreas Fault line is located approximately 40 miles to the southwest of the project site. Other substantial faults in the Bay Area include the Rodgers Creek Fault, Hayward Fault, Calaveras Fault, and San Gregorio Fault. These faults also have the potential to result in large magnitude ground shaking events.

When an earthquake occurs, energy waves are radiated outward from the fault. The amplitude and frequency of earthquake ground motions partially depends on the material through which it is moving and distance from the source. The earthquake force is transmitted through hard rock in short, rapid vibrations, while this energy movement becomes a long, high-amplitude motion when moving through soft ground materials, such as valley alluvium. The force an earthquake applies to a structure is expressed in terms of a percentage of gravity (g). For example, an earthquake that produces 0.30 g horizontal ground acceleration will impose a lateral force on a structure equal to 30 percent of its total vertical weight. The intensity of an earthquake is expressed in terms of its effects, as measured by the Modified Mercalli Intensity Scale, and in terms of the quantity of energy



SOURCE: Napa County, 2006; ESRI Data 2005; AES 2007

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**Figure 4.4-2**  
Napa County Faults

released, or magnitude, as measured by the Richter scale. On the Richter scale every one-unit increase indicates an increment of roughly 30 times the energy.

Numerous earthquakes have occurred in the Napa County region within historic times. Between 1735 and 2005, 97 earthquakes occurred and were recorded with a magnitude of 5.0 on the Richter scale or larger and occurred within 200 kilometers (or approximately 124 miles) of the center of Napa County (Napa County, 2005). Seven substantial earthquakes have occurred and been recorded since 1836 within 61 miles of the center of Napa County, which had median peak bedrock accelerations of 0.04 g to 0.10 g. This includes the 1906 earthquake of magnitude 8.3 with a median peak bedrock acceleration of 0.10 g located 55 miles from the center of Napa County. Napa County has also felt the effects of numerous other earthquakes along the previously mentioned faults in the Bay Area, including the 1989 earthquake along the Loma Prieta Fault.

To estimate the probability of future earthquake events in the Bay Area, USGS considered potential sources of an event on seven different fault systems in the Bay Area. Based on a combined probability of all seven fault systems and background earthquakes, there is a 62 percent chance of a magnitude 6.7 or larger earthquake occurring in the Bay Area by the year 2032. Smaller earthquakes, between magnitudes 6.0 and 6.7, capable of considerable damage, have about an 80 percent chance of occurring in the Bay Area by 2030 (USGS, 2003).

### *Seismic Hazards*

Seismic hazards are effects that are caused by surface fault rupture and seismic shaking from a seismic event. Surface fault rupture occurs when a fault breaks through to the ground surface during a seismic event. The CGS determined that in Napa County there are three faults that are active and capable of undergoing surface fault rupture, the West Napa fault, Green Valley fault, and Hunting Creek fault (Napa County, 2005). As discussed above, the project site is susceptible to little hazard from rupture along an active fault trace.

Seismic shaking can result in structural damage. This risk is high because shaking damage can be caused by any of the active faults in the Bay Area discussed above. The severity of the shaking damage at a particular location depends on a number of factors, including the magnitude of the earthquake, the distance to its epicenter, and the nature and thickness of the deposits at the location. Areas that are subject to the greatest ground shaking damage are anticipated to be within Napa County's various valleys, because they consist of deep, unconsolidated alluvial deposits underlain by saturated estuarine deposits, which are subject to higher amplitude and longer duration shaking motions (Napa County, 2005).

Ground failures, or secondary effects, from ground shaking can extend many miles from the earthquake fault that generated the shaking. Ground failures include landsliding, differential

settlement, lateral spreading, and liquefaction. Landsliding triggered by ground shaking occurs in the same types of hilly or mountainous terrains that are susceptible to non-seismically induced sliding events. Ground shaking can reactivate dormant landslides, cause new landslides, and accelerate or aggravate movement on active slides. Differential settlement is the non-uniform densification of loose soils that occurs during strong ground shaking and causes uneven settlement of ground surface. Differential settlement could occur in numerous locations, but most likely the valley areas of Napa County. Lateral spreading is a ground failure in which a subsurface layer of soil liquefies, resulting in the overlying soil mass deforming laterally toward a free face. Limited lateral spreading could occur in alluvial areas adjacent to open stream channels where a bank or terrace face exists. On the project site the risk of seismically induced hillslope failure is nearly absent given the shallow soils and expected ground accelerations ranging from 0.2 to 0.3 g, and there are no steep channel banks in the valley that could be affected by lateral spreading (Trso, 2008).

Liquefaction is a process in which sandy, saturated soils become liquefied and lose their bearing capacity during seismic ground shaking. As a result, sufficiently liquefied soils can no longer support structures built on or beneath them. Liquefaction potential is dependent on such factors as soil type, depth to groundwater, degree of seismic shaking, and the relative density of the soil. Soils most susceptible to liquefaction are saturated, clean, loose, uniformly graded, fine-grained, unconsolidated materials that are most commonly associated with alleviated valleys with high groundwater levels. On a countywide basis, the potential for liquefaction-induced ground failures is relatively low, since only about 20 percent of the County is alleviated valleys. Based on the depth to bedrock, the project site's susceptibility to liquefaction is considered to be high within the valley fill and low within the alluvial fans and upland areas (Trso, 2008).

## 4.4.2 REGULATORY FRAMEWORK

### 4.4.2-1 NAPA COUNTY

The Napa County General Plan (General Plan; 2008) serves as a broad framework for planning within Napa County. State law requires general plan's to cover a variety of topics. The General Plan contains goals and policies related to open space conservation, natural resources, water resources and safety that provide guidance for issues related to geology and soils from the proposed project.

### Open Space Conservation Policies

Policy CON-5: The County shall identify, improve, and conserve Napa County's rangeland through the following measures:

- d) Encouraging livestock management activities to avoid long-term destruction of rangeland productivity and watershed capacity through overgrazing, erosion, or damage to riparian areas.

Policy CON-6: The County shall impose conditions on discretionary projects which limit development in environmentally sensitive areas such as those adjacent to rivers or streamside areas and physically hazardous areas such as floodplains, steep slopes, high fire risk areas and geologically hazardous areas.

### Natural Resources Policies

Policy CON-38: The County shall identify, improve, and conserve Napa County's sand and gravel resources, preventing removal of streambed sand and gravel in any manner that would cause adverse effects on water quality, fisheries, riparian vegetation, or flooding.

### Water Resources Policies

Policy CON-48: Proposed developments shall implement project-specific sediment and erosion control measures (e.g., erosion control plans and/or stormwater pollution prevention plans) that maintain pre-development sediment erosion conditions or at minimum comply with state water quality pollution control (i.e., Basin Plan) requirements and are protective of the County's sensitive domestic supply watersheds. Technical reports and/or erosion control plans that recommend site-specific erosion control measures shall meet the requirements of the County Code and provide detailed information regarding site specific geologic, soil, and hydrologic conditions and how the proposed measure will function.

Policy CON-49: The County shall develop and implement a water quality monitoring program (or programs) to track the effectiveness of temporary and permanent Best Management Practices (BMPs) to control soil erosion and sedimentation within watershed areas and employ corrective actions for identified water quality issues (in violation of Basin Plans and/or associated TMDLs) identified during monitoring.

Policy CON-50: The County will take appropriate steps to protect surface water quality and quantity, including the following:

- g) Address potential soil erosion by maintaining sections of the County Code that require all construction-related activities to have protective measures in place or installed by the

grading deadlines established in the Conservation Regulations. In addition, the County shall ensure enforceable fines are levied upon code violators and shall require violators to perform all necessary remediation activities.

#### Safety Goals and Policies

Goal SAF-1: Safety considerations will be part of the County's education, outreach, planning, and operations in order to reduce loss of life, injuries, damage to property, and economic and social dislocation resulting from fire, flood, geologic, and other hazards.

Goal SAF-2: To the extent reasonable, protect residents and businesses in the unincorporated area from hazards created by earthquakes, landslides, and other geologic hazards.

Policy SAF-8: Consistent with County ordinances, require a geotechnical study for new projects and modifications of existing projects or structures located in or near known geologic hazard areas, and restrict new development atop or astride identified active seismic faults in order to prevent catastrophic damage caused by movement along the fault. Geologic studies shall identify site design (such as setbacks from active faults and avoidance of on-site soil-geologic conditions that could become unstable or fail during a seismic event) and structural measures to prevent injury, death and catastrophic damage to structures and infrastructure improvements (such as pipelines, roadways and water surface impoundments not subject to regulation by the Division of Safety of Dams of the California Department of Water Resources) from seismic events or failure from other natural circumstances.

Policy SAF-9: As part of the review and approval of development and public works projects, planting of vegetation on unstable slopes shall be incorporated into project designs when this technique will protect structures at lower elevations and minimize the potential for erosion or landslides. Native plants should be considered for this purpose, since they can reduce the need for supplemental watering which can promote earth movement.

Policy SAF-10: No extensive grading shall be permitted on slopes over 15 percent where landslides or other geologic hazards are present unless the hazard(s) are eliminated or reduced to a safe level.

#### *4.4.2-2 NAPA COUNTY RESOURCE CONSERVATION DISTRICT*

The Napa County Resource Conservation District (RCD) published the Napa River Watershed Owner's Manual in 1996. The manual contains the following objective and recommendations that pertain to the proposed project:



### Objective G: Reduce Soil Erosion

Recommendation G2: Reduce erosion resulting from agricultural activities. Agricultural activities in the Napa River watershed include grazing, viticulture, small farms and horticulture. Soil disturbance or vegetation removal as a result of agricultural activities can result in loss of topsoil and subsequent water quality degradation. Good agricultural management can also benefit water quality and wildlife habitat, and can contribute to the overall good health of the watershed.

Relevant sub-recommendations include:

- G2.1. Emphasize erosion prevention over sediment retention as a priority in agricultural planning and operations.
- G2.2. Promote the use of permanent vegetative ground cover in vineyards. Support research, demonstrations and technology exchange to refine cover crop technology for vineyards and orchards.
- G2.4. Maintain access roads and farm roads to control storm water runoff in agricultural areas. Utilize assistance from the U.S. Department of Agriculture (USDA) Natural Resource Conservation Service, or other erosion control professionals, for design of storm water runoff control on rural roads.
- G.2.5. Minimize wet weather vehicle traffic through or across agricultural areas, especially on hillsides.
- G.2.6. Provide adequate energy dissipaters for culverts and other drainage pipe outlets.
- G.2.7. Establish vegetated buffer strips along waterways.

## 4.4.3 IMPACTS AND MITIGATION MEASURES

### 4.4.3-1 SIGNIFICANCE CRITERIA

The proposed project would involve earthmoving activities associated with the development of vineyard areas and erosion control measures and other features associated with #P06-01508-ECPA on slopes greater than five percent, as well as the development of vineyard areas on slopes less than five percent, as outlined in **Chapter 3.0**. The proposed project does not include the construction of buildings for human occupancy or equipment storage, and therefore, would not expose people or structures to potential adverse effects from earthquakes or earthquake-related ground failure, including the risk of property loss, injury, or death. Given that the agricultural nature of the proposed project does not include structures, this EIR does not consider expansive soils an issue for the project site, and therefore, is not included as a criterion of significance. Additionally, this EIR does not address soil conditions as they relate to onsite waste disposal because wastewater disposal

to subsurface soils is not part of the project. For the purposes of this EIR, the proposed project would have a significant impact if it would:

- Result in the accelerated, long-term erosion and loss of topsoil causing substantial depletion of the agricultural resource or an increase in the rate and quantity of sediment accumulated down slope to the extent that it damages roads, vineyard facilities, adjoining vineyards, or deposits excessive sediment in natural waterways, or in the current case, Milliken Reservoir.
- Alter the topographic or geologic site conditions such that an earthquake would cause substantial damage to the proposed vineyard, or a geologic unit or soil would become unstable, thereby resulting in excessive erosion, soil creep, catastrophic slope and ground failure, or loss of cultivatable land area.

#### 4.4.3-2 IMPACTS AND MITIGATION MEASURES

**Impact 4.4-1:** Development of the proposed project would alter the rate of sediment erosion and yield onsite; however, a slight decrease in sediment erosion and yield, and a less-than-significant impact to receiving waters would result.

The conversion of existing habitats on the Circle S Ranch to vineyard would result in the removal of substantial amounts of existing brush/shrubs and trees, as well as soil ripping, earthmoving and grading activities. Vegetation clearing would remove obstacles to sediment transport and expose new soils. Soil ripping and other earthmoving activities would loosen these soils, increasing their susceptibility to erosion from removal by water from the processes of hillside erosion and soil creep, especially in overland flow areas. An increased amount of sediment that erodes from the project site could result in increased sediment yields to onsite drainages including Milliken Creek, as well as downstream receiving waters offsite, including Milliken Reservoir. The proposed project would also include the incorporation of erosion and runoff control measures proposed in #P06-01508-ECPA. The ECPA has been designed to develop vineyard blocks with the same or greater vegetation cover as existing conditions, and store all vineyard-related particulate sediment (i.e. silt and coarser grain sizes) onsite. The removal of existing road-stream crossings would alter the hydrologic pattern and the dynamics of erosional processes in these stream channels. The removal of cattle grazing would revitalize existing trampled vegetation in grazing areas and provide greater obstacles to sediment transport. An impact from the conversion of existing vegetation to vineyard areas would be considered significant if sediment erosion and yield were substantial to the extent that damage occurred to roads, vineyard facilities, or adjoining vineyards, or if sedimentation in receiving waters is excessive. Since the mainstem Napa River has been listed as sediment-impaired according
















to the Clean Water Act, Section 303 (d), no net increase in sediment yield offsite should occur from the proposed project.

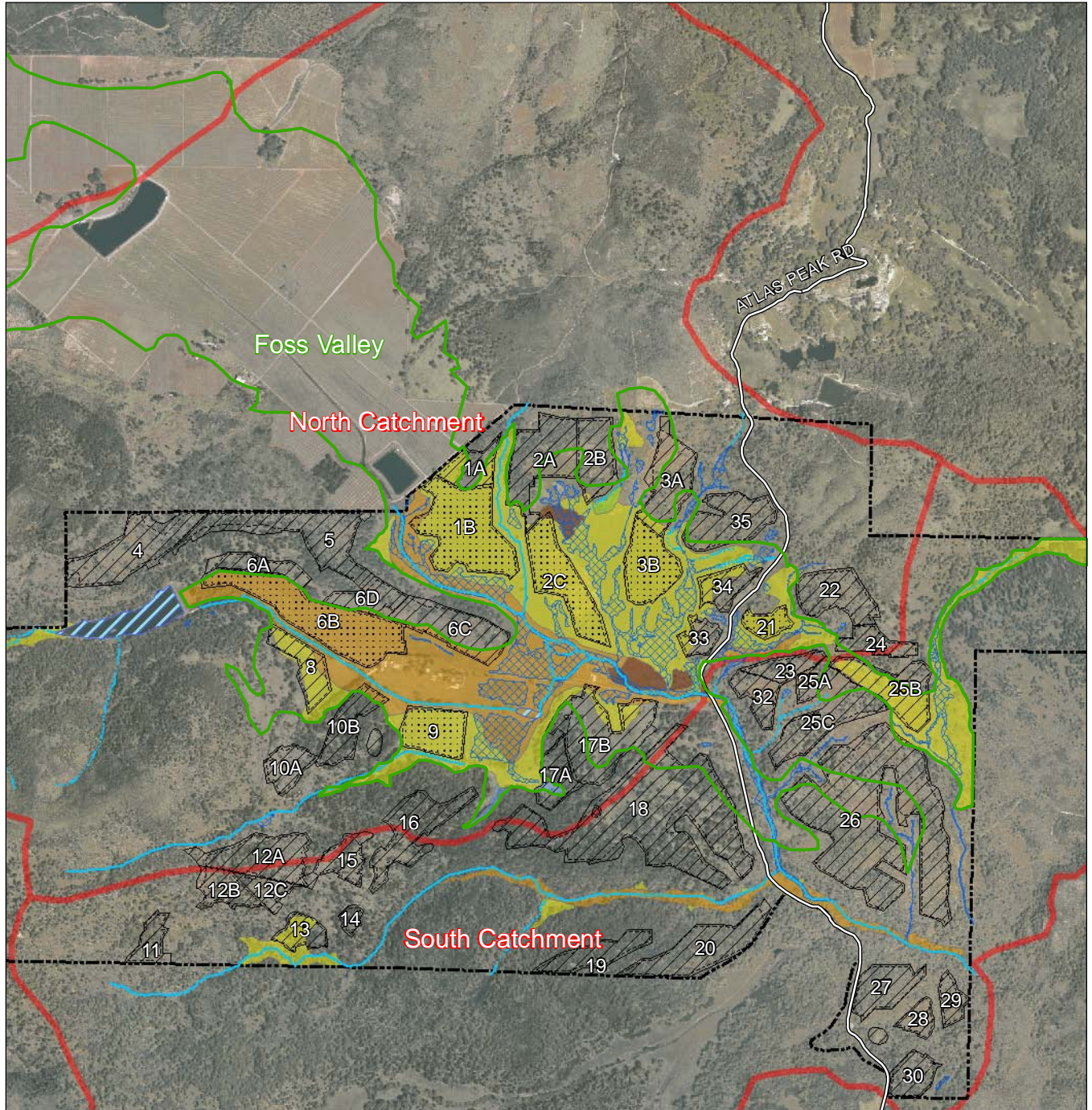
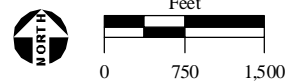
### **Sediment Budget Analysis Methodology**

To evaluate the effects of the proposed project on sediment erosion and yield, a quantitative sediment budget analysis was completed (**Appendix G**). Sediment budgets calculate the volume of sediment output from an area dependent on sediment erosion and the change in sediment storage of the area. Recently, sediment budgets have been used to provide a reasonable estimate of erosion, sedimentation, and sediment transport within a basin, in the absence of long-term and extensive measurements of suspended sediment and bedload. To determine the change in yield, sediment budgets were calculated for the existing project site conditions, conditions after development of the proposed project, and cumulative conditions (all vineyard development within Milliken Watershed); for these calculations the project site was divided into North and South Circle S Ranch catchment areas (**Figure 4.4-3**). The Circle S Ranch sediment budget was partially empirical and partially modeled. The sediment budget was based on: (1) the assessment of land type and land use specific sediment production through field surveys and Universal Soil Loss Equation (USLE) modeling; (2) the estimated hill slope delivery ratios (HSDR); and (3) the estimated sediment trapping of the proposed erosion control plan (ECP) measures, and within the natural alluvial landforms, the property reservoir, and the onsite stockpond. For reasons of field sampling, the sediment budget was subdivided by various landscape and land use attributes, in order to estimate the trapping efficiencies of the erosion control measures and natural landforms, and to identify the potential sediment impacts on the project site and on the offsite ecosystem.

The assessment of land type and land use specific sediment production was limited to sediment sources identified in the field, including: 1) shallow soil creep within stream channel banks along ephemeral and intermittent upland watercourses onsite; 2) surface erosion within and outside the proposed vineyard blocks, and within the OFAs along the upland and alluvial landform watercourses onsite; and 3) streambank mass wasting along several reaches within the alluvial landform watercourses onsite. Road-related erosion was not factored into the sediment budget because only a marginal percentage (one percent) of the roads were determined to be hydrologically connected to onsite drainages. A 100 percent sediment delivery ratio was assumed for the processes of shallow soil creep and the streambank mass wasting processes for all grainsize fractions. Based on observations made over the past year and half at the project site, a grainsize specific ratio was used that assumes that all grainsizes except gravel are delivered from fluvially-connected hillsides to the stream channels. This ratio will reasonably estimate the conditions during very wet winters or high-intensity storm events.

**LEGEND**

- |  |   |  |
|--|---|--|
|  Property Boundary  |  Active Alluvial Fan                 |  Circle S Ranch Catchments                    |
|  USGS Streams       |  Alluvial Fan Deposit                |  Proposed Vineyard Blocks                     |
|  Other Drainages    |  Bedrock Outcrop Within Alluvial Fan |  Slopes Greater Than 5% and Included in ECPA  |
|  Wetlands           |  Colluvial-Hollow                    |  Slopes Less Than 5% and Not Included in ECPA |
|  Existing Reservoir |  Valley Fill Deposit                 |  Vineyard Avenues                             |



**Figure 4.4-3**  
Sediment Budget Setting

The sediment storage change was assessed for hillslopes and for wetland channels within the Quaternary surficial deposits, the reservoir, and the stockpond. Hillslope storage is defined as hillslope erosion minus the sediment delivery to stream channels. Due to the high transport capacity of the stream channels, no increase in in-channel sedimentation due to changes in the sediment supply regime would be expected to occur on the project site. However, a reduction in in-channel storage is expected to occur within the wetland channels and within the small alluvial fans onsite due to a high trapping efficiency, the result of a lack of channel confinement and low channel transport capacity.

It should be noted that the sediment budget assume that no livestock grazing would occur under the proposed project. However, as discussed in **Chapter 4.2**, limited livestock grazing would occur with the implementation of mitigation measures. Since livestock grazing would be limited and the density of vegetation cover is expected to increase, the assumptions used in the sediment budget study regarding land use are still appropriate. In addition, a few of the vegetation alliances mapped in the hydrology study were subsequently modified to those shown in **Figure 4.2-1** and discussed in **Chapter 4.2**. However, these changes consisted of slight boundary adjustments or designation of an area to a similar vegetation type, and the results of the sediment budget are not anticipated to differ.

## Results

Existing conditions on the project site and in the onsite catchments reflect natural processes, ongoing land use, and legacy effects of past land use and wildfires. The sediment budget estimated that a total of 6,256.6 tons/year or 3.92 tons/acre-year of sediment are currently produced onsite from erosional processes. The total includes sediment contributions of 3,538.6 tons/year (56 percent) from hillside surface erosion in areas not proposed for vineyard development, 1,611.7 tons/year (26 percent) from hillside surface erosion in areas proposed for vineyard development, 566.9 tons/year (9 percent) from natural shallow soil creep along upland drainages, and 539.4 tons/year (9 percent) from streambank instability along the alluvial watercourses.

After implementation of the proposed project, total erosion within the property would decrease by 1,518.1 tons/year to 4,738.5 tons/year, a 24.3 percent reduction. After development of the proposed project, hillside surface erosion from areas developed into vineyard would decrease from 1,611.7 tons/year to 560.5 tons/year, a reduction of 1,051.3 tons/year or 65 percent. An average reduction of 62.5 percent per proposed vineyard block would result. The reduction in erosion from the vineyard blocks is achieved by an increase in ground cover within proposed vineyard blocks and the use of vegetated and/or rock covered vineyard avenues around the blocks, which results in the shortening of hillslope lengths within the blocks. However, there would be an increase in surface erosion (between

23.8 percent and 26 percent) within proposed Blocks 13 and 21 due to a decrease in ground cover.

The removal of livestock grazing proposed by the project results in a reduction in hillside surface erosion in the areas not proposed for vineyard development. The sediment budget estimates total erosion in these areas would decrease from 3,538.6 tons/year to 3,323.2 tons/year, a reduction of 215.4 tons/year or 6.1 percent. Erosion rates within the upland OFAs would be reduced by 24.9 percent and rates within the valley-floor area OFAs would be reduced by 93.6 percent. Erosion rates in the non-OFA areas would remain the same.

The sediment budget also estimated the amount of eroded sediment that is transported to onsite watercourses, expressed as sediment yield onsite (**Table 4.4-2**). Sediment yield onsite under existing conditions is estimated to be 1,872.2 tons/year or 1.17 tons/acre-year. This total includes sediment source contributions of 717.7 tons/year (38 percent) from hillside surface erosion in OFAs not proposed for vineyard development, 48.3 tons/year (3 percent) from hillside surface erosion within the vineyard area OFAs, 566.9 tons/year (30 percent) from natural shallow soil creep along the watercourse corridors, and 539.4 tons/year (29 percent) from streambank instability along the alluvial watercourses.

After development of the proposed project, total sediment yield from the project site would decrease by 1,518.1 tons/year to 4,738.5 tons/year, a 24.3 percent reduction. Sediment yield from hillside surface erosion within OFAs proposed for vineyard development would be reduced from 48.3 tons/year to 13.2 tons/year, a reduction of 35.1 tons/year or 73 percent. This reduction is reflective of both the decrease in surface erosion due to increased ground cover on most proposed vineyard blocks and the effects of other vegetative erosion control measures.

Not all eroded sediment is transported to the project site watercourses, as some sediment becomes trapped by obstacles on the ground (including erosion control measures) or in onsite water features. Sediment trapping in water features on the project site occurs in wetlands and unconfined channels of the alluvial fan and valley fill areas, the Circle S Ranch reservoir, and the stockpond. Development of the proposed project would not alter sediment trapping in the Circle S Ranch reservoir, since no change in land use would occur to areas draining to the reservoir. The results of the sediment budget indicate that sediment trapping in the stockpond would be eliminated, due to a decrease in the sediment trapping rate from 21.0 tons/year to 0.0 tons/year. The elimination sediment trapping in the pond would be due to the proposed vineyard development, the removal (management) of livestock grazing and the proposed stream channel restoration. The sediment budget estimated that under existing conditions 739.6 tons/year of sediment (silt and coarser) are trapped in alluvial landforms, which accounts for about 40 percent of project site sediment yield. It is estimated that development of the proposed project would decrease sediment

trapping in alluvial landforms to a rate of 617.8 tons/year, a reduction of 121.8 tons/year or 17 percent. This decrease is attributed to the proposed vineyard development, the associated elimination of livestock grazing, and the stream channel restoration.

When accounting for sediment yield onsite and trapping in onsite water features, the amount of sediment supplied to offsite receiving waters is currently estimated to be 1,117.8 tons/year. **Table 4.4-2** provides a breakdown of sediment yield onsite and offsite estimated in the sediment budget for the Circle S Ranch compared to other areas drained by the onsite catchment, as well as the change in grain-size of sediment delivery and yield from development of the proposed project. **Table 4.4-3** provides a breakdown of sediment yield offsite estimated by the sediment budget for each of the Circle S Ranch catchments and for each particle size. Other properties within the sediment budget watersheds the watershed include the Atlas Peak Vineyards, Sutro, Parmenter, and Brown properties to the north; Atlas Peak Vineyards, the Martin and the Saghi family properties to the west; Walt Ranch of the Hall Brambletree Associates, LP to the east; and Mead Ranch of the Mead family to the south. Sedimentation from these properties is captured in the category "Other Properties Combined" in **Table 4.4-2**. Sediment yield offsite from the sediment budget watersheds amounts to 60.4 percent of the current background sediment loading rate in the Milliken Reservoir watershed. Development of the proposed project results in a total decrease in sediment from the project site and the entire sediment budget drainage area of 338.5 tons/year or 19 percent.

## Findings

Development of the proposed project would alter sediment erosion rates onsite, but would not result in adverse effects to onsite or offsite watercourses. This is because of 1) the natural geologic disconnectivity between Foss Valley and the lower portion of the Milliken Reservoir watershed; 2) the natural sediment-buffering functions of the small upland and the large valley-floor alluvial fans onsite; and 3) the location of the proposed vineyard areas and erosion and runoff control measures.

The sediment budget developed for this impact assessment shows that the proposed project would reduce the total hillside erosion within the Circle S Ranch by 24.3 percent. This includes a 65.2 percent decrease in hillside surface erosion within the proposed vineyard areas. Decreases in erosion would be attributed to erosion control measures such as straw wattles and the annual maintenance of vegetative measures such as the 75 to 80 percent no-till cover crop within the proposed vineyard blocks, and seeding and straw-mulching.

**TABLE 4.4-2**  
TOTAL SEDIMENT BUDGET

Area	Sediment Yield Onsite (tons/year)					Sediment Yield Offsite (tons/year)				
	Total	Gravel	Sand	Silt	Clay	Total	Gravel	Sand	Silt	Clay
<b>Existing Conditions</b>										
Circle S Property	1,872.2	411.3	479.5	363.2	476.5	1,117.8	292.4	251.3	226.6	347.5
Other Properties Combined	821.7	56.4	122.6	153.2	489.4	680.3	31.0	71.1	88.9	489.4
Entire Catchment	2,693.9	467.7	602.1	516.4	965.9	1,798.1	323.4	322.4	315.5	836.9
<i>Circle S Ranch Property (%)</i>	<i>69.5</i>	<i>87.9</i>	<i>79.6</i>	<i>70.3</i>	<i>49.3</i>	<i>62.2</i>	<i>90.4</i>	<i>77.9</i>	<i>71.8</i>	<i>41.5</i>
<b>Proposed Project Conditions</b>										
Circle S Property	1,380.7	285.7	340.0	374.6	380.5	779.3	186.1	164.2	154.8	273.5
Other Properties Combined	821.7	56.4	122.6	153.2	489.4	680.3	31.0	71.1	88.9	489.4
Entire Catchment	2,202.4	342.1	462.6	527.8	869.9	1,459.6	217.4	235.3	243.7	762.9
<i>Circle S Ranch Property (%)</i>	<i>62.7</i>	<i>83.5</i>	<i>73.5</i>	<i>71.0</i>	<i>43.7</i>	<i>53.4</i>	<i>85.6</i>	<i>69.8</i>	<i>63.5</i>	<i>35.9</i>
<b>Change (%)</b>										
Circle S Property	-26.3	-30.5	-29.1	3.1	-20.1	-30.3	-36.4	-34.7	-31.7	-21.3
Other Properties Combined	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Entire Catchment	-18.2	-26.9	-23.2	2.2	-9.9	-18.8	-32.8	-27.0	-22.8	-8.8

Source: Trso, 2008

**TABLE 4.4-3**  
CIRCLE S RANCH SEDIMENT YIELD OFFSITE

Circle S Ranch		Sediment Yield Offsite (tons/year)				
		Total	Gravel	Sand	Silt	Clay
North Catchment	Existing	154.3	0.0	0.0	0.0	154.3
	Proposed Project	123.3	0.0	0.0	0.0	123.3
South Catchment	Existing	963.5	292.4	251.3	226.6	193.2
	Proposed Project	655.0	186.1	164.2	154.8	150.2
Total Property	Existing	1,117.8	292.4	251.3	226.6	347.5
	Proposed Project	779.3	186.1	164.2	154.8	273.5

Source: Trso, 2008

Stream channel restoration would reduce total hillside erosion within the project site by four percent and the removal of cattle grazing would reduce total hillside erosion by a further 2.9 percent. The proposed project would also reduce total sediment yield from the project site by 30.3 percent on average. Applying the colluvium grainsize distribution, there would be a 36.1 percent reduction (105.6 tons/year) in the transport of gravel, 34.7 percent reduction (87.1 tons/year) of sand, 31.7 percent reduction (71.8 tons/year) of silt, and 20.0 percent



reduction (69.5 tons/year) of clay. The reduction of gravel originates from the elimination of streambank instability within the alluvial reaches onsite.

Since total sediment yield from the project site would decrease after implementation of the proposed project, affects associated with increased sediment loading in onsite and offsite watercourses would be avoided. Therefore, the proposed project would be developed in compliance with sediment restrictions for the Napa River under the Clean Water Act, Section 303 (d). This is considered a less-than-significant impact.

**Mitigation Measure 4.4-1:** No mitigation is required.

**Impact 4.4-2:** Development of the proposed project would involve earthmoving activities that would alter the existing topographic and geologic conditions at the project site; however, conditions would not be altered such that an earthquake would result in significant damage to the project site from excessive erosion, soil creep, or catastrophic slope and ground failure. This is considered a less-than-significant impact.

The Circle S Ranch could realistically experience an earthquake event from one of the numerous active faults of the San Andreas Fault zone. Numerous earthquakes with large magnitudes have occurred in the Bay Area over the last few centuries, and the USGS estimates that an earthquake will likely occur in the Bay Area of magnitude 6.0 or greater in the future. The proposed project includes the conversion of natural hillslope and alluvial valley areas into vineyard, road improvements and new road development, and stream restoration activities. This would involve earthmoving activities, soil cultivation, installation and maintenance of drainage and erosion control features, and vineyard plantings. Modifications that would alter the geologic setting of the property would be relatively minor changes associated with earthmoving activities for development of vineyards and associated avenues, and roads. Since the proposed project would not include construction of buildings or other facilities that would attract a large number of people, the potential risk of exposing people or structures to hazards from a seismic event would remain low.

Surface fault rupture would not occur at the project site, since none of the active faults in Napa County that the CGS determined capable of underground surface fault rupture are located at the Circle S Ranch.

Ground failures due to seismically induced ground shaking can reactivate dormant landslides, cause new landslides, and accelerate or aggravate movement on active slides, as well as result in differential settlement, lateral spreading, and liquefaction. A geotechnical report (**Appendix L**) was completed for the proposed project in compliance with Napa County 18.108.027 (F), which requires a geotechnical report for projects located in Sensitive Domestic Water Supply Drainages. As discussed in the Setting section, there are no active

deep-seated landslides, shallow landslides, or hillside gullies at the project site. The areas consisting of bedrock hollows, which are highly susceptible to landsliding, would not be altered from development of the proposed project. Thus, the proposed vineyard areas are located entirely within areas determined by the SHALSTAB model to be unconditionally stable. Further, the risk of seismically induced hillslope failure is nearly absent given the shallow soils and expected ground accelerations ranging from 0.2 to 0.3 g.

Differential settlement is not likely to occur in the mountainous regions of the County, such as on the Circle S Ranch. Lurching or lateral spreading are unlikely to occur because there are no steep channel banks. As discussed, based on the depth to bedrock, the project area's susceptibility to liquefaction is considered to be high within the valley fill and low within the alluvial fans. Proposed Block 6B and marginal portions of proposed Blocks 6C, 1B, 10B, 8, and 17B are located within the valley fill areas (**Figure 4.4-3**). While a ground shaking event could result in the distortion of some vineyard rows from liquefaction, significant damage would not be expected since only minor alterations would occur to the topography. Further, no people or structures would be exposed to potential risk. This is considered a less-than-significant impact.

**Mitigation Measure 4.4-2:** No mitigation is required.

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## 4.5 HAZARDOUS MATERIALS

This section describes the current site conditions and operations related to hazardous materials use at the project site. The potential risk from the proposed project to the public and the environment through the transport, use and disposal of hazardous materials are discussed, including applicable federal, state and local regulations.

This section only addresses hazardous materials (not hazards); hazards associated with a school or public airport would not apply to the proposed project, as the project site is located approximately four miles from the nearest school and greater than twelve miles from the nearest airport. The proposed project would also not interfere with an adopted emergency response plan or emergency evacuation plan and would not expose people or structures to a significant risk of loss, injury or death involving wildland fires.

### 4.5.1 SETTING

#### 4.5.1-1 CURRENT SITE CONDITIONS

##### *Previous Investigations*

A Phase I Environmental Site Assessment (ESA) was conducted on the project site in February 2005 (**Appendix H**; ATC Associates Inc., 2005). The ESA was conducted in accordance with the American Society for Testing and Materials (ASTM) standard practice E 1527-05. The purpose of the ESA is to identify hazardous materials involvement or Recognized Environmental Conditions (RECs) on the subject property or adjacent properties. The term REC refers to the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate a past release, or a material threat of release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property.

The ESA reported the presence of two above ground storage tanks on the property. The tanks are used for diesel and unleaded gasoline for ranching and farming activities. The tanks were reported to be in good physical condition with no signs of leaks, with the exception of incidental surface soil staining from fueling farm equipment. Additionally, three 55-gallon drums containing used motor oil, mineral spirits (i.e. low grade thinners/solvents), and diesel fuel were observed on the property. The ESA recommends that the waster oil drum be properly labeled and stored in secondary containment. There were approximately ten septic systems that were being utilized at the time of the site visit. The septic systems are ten to 50 years of age.

The ESA reported three RECs in connection with the project site. A single walled 550-gallon underground storage tank (UST) was excavated and subsequently removed on May 12, 1997 by JKH Engineering of Lower Lake California. A single soil sample was collected seven feet below the bottom of the excavation pit and analyzed for gasoline and gasoline constituents. The soil sample was analyzed for total petroleum hydrocarbons such as gasoline (TPH-g), benzene, toluene, ethylbenzene, and total xylenes (BTEX). The samples were non-detect (ND) for TPH-g and BTEX. The sample was not analyzed for methyl tert-butyl ether (MTBE). Since the appropriate samples were not collected from the UST excavation pit and the soil sample was not analyzed for MTBE, the former UST is considered a REC.

The ESA also documented the presence of an excavated tank inside a storage shed. The ranch manager was unaware of the age, size, previous location, and previous contents of the tank. The presence of the excavated UST is considered a REC.

A former dump area (considered a REC) was identified on the southern portion of the property for household waste, organic agricultural wastes, and various wastes from general maintenance of the property (paint, paint thinner, and waste oils). The area was used as a dumping area for approximately 50 years. The dump area was excavated and all debris was removed from the site in 2005. Subsequent soil sampling was performed and compared to the Shallow Soil Screening Levels for Commercial/Industrial Land Use supplied by the Regional Water Quality Control Board (RWQCB), San Francisco Bay Region. The soil samples were analyzed for Volatile Organic Compounds (VOCs), Semi Volatile Organic Compounds (SVOCs), mercury, priority pollutant metals, Polychlorinated Biphenols (PCBs), pesticides, and TPH-g. All samples were below the laboratory detection levels. The only exception was elevated levels of arsenic in one of the composite samples. The analytical results showed arsenic levels of 5.7 milligrams per kilogram (mg/kg). The results were compared to a background sample collected in the project area. The background sample showed arsenic levels of 5.1 mg/kg. It was therefore determined that arsenic levels within the dump area were representative of background levels and no further studies for hazardous materials were recommended.

### *Database Searches*

Regulatory agency databases were searched in an effort to identify locations of current and historical hazardous materials storage, generation, and release. It should be noted that a site could be listed on a hazardous materials database and be in compliance with local, state and federal laws. Circle S Ranch is listed on several databases, including the State Facility Inventory Database (CA FID) and the Hazardous Substance Storage Container Database (HIST UST) for a single gasoline above ground storage tank (AST). The Circle S Ranch is also listed on the Haznet database for producing 0.93 tons of waste oils that are removed offsite for recycling. The database report contained no records of gross

contamination or violations pertaining to hazardous materials.

#### 4.5.1-2 CURRENT AND PROPOSED VINEYARD OPERATIONS

The current onsite operations involve farming the existing 27 acres of vineyard on the property. The vineyards are being farmed sustainably; proposed vineyard blocks would also be farmed sustainably. Sustainable farming is defined as being environmentally sound, economically viable, and equitable. The sustainable approach allows latitude in making decisions on controlling weeds, pests and disease; chemical, mechanical or biological means may be used. No pre-emergent herbicides are, or would be, used on the Ranch, and the use of pesticides is strictly limited; the “softest” pesticides are used at the lowest rate possible (PPV, 2008); also see **Table 4.5-1** for proposed agricultural chemical use.

Hazardous chemicals on the project site include two above ground storage tanks; a 550-gallon diesel fuel tank and a 1,000 gallon unleaded fuel tank that are located at the compound along the existing driveway on the ranch. With the proposed project, these tanks would continue to be used, and use could potentially increase with vineyard activities. In addition, motor oil and unleaded gasoline are stored near the garage and wood shop located off the driveway in the middle of the project site, and diesel fuel is located near the water pump shed. Waste oil is stored in an onsite containment area and is picked up by a waste oil recycler on a regular basis for offsite recycling. The annual waste oil weight created from the current Circle S Ranch vineyard operations is approximately 845 kilograms (0.93 tons per year). Annual waste oil generated by the proposed project (approximately four tons (about 400 gallons of oil)) would continue to be stored on the project site and would be picked up regularly for recycling.

Integrated Pest Management (IPM) techniques would be used to reduce the use of chemical pesticides on the vineyard. IPM techniques include permanent cover crop, beneficial insects, and minimal to no use of chemical pesticides. IPM employs an aggressive visual monitoring regime that will identify the presence of invasive insects prior to infestation. If an infestation occurs chemical pesticides will be used only as a last resort. Proposed fertilizers, herbicides (weed control), and mildewicides may be applied up to six times per year during vineyard operations. Weed control is applied by tractors or ATVs in February, March, June, or July in vineyard rows. Mowing occurs between rows from March to June. Mowing will reduce invasive insect habitat, potentially reducing pesticides that would otherwise be used to control insects. Proposed fertilizers and pesticides that would be used on the vineyard are described in **Table 4.5-1** below. The proposed project would only use EPA certified pesticides and any excess pesticides would be disposed of in compliance with federal, state, and local regulations.

**TABLE 4.5-1**  
CIRCLE S RANCH PROPOSED CHEMICAL USE

Name	Storage	Application Method	Application Location	Application Amount (per acre)	Number of Applications (per year)	Time of Day/Year of Application
Nitrogen (Fertilizer)	Locked down railroad container	Fertigate	Vineyard	Up to 40 pounds	Up to 3	Day Spring/Fall
Calcium (Fertilizer)	Locked down railroad container	Fertigate	Vineyard	Up to 3 tons	Up to 5	Day Spring/Fall
Phosphorus (Fertilizer)	Locked down railroad container	Fertigate	Vineyard	Up to 400 pounds	Up to 5	Day Spring/Fall
Potassium (Fertilizer)	Locked down railroad container	Fertigate	Vineyard	Up to 300 pounds	Up to 5	Day Spring/Fall
Micro-Nutrients (Fertilizer)	Locked down railroad container	Fertigate	Vineyard	Up to 20 pounds	Up to 5	Day Spring-Summer-Fall
Compost (Soil amendment)	Piles on ground	Broadcasted	Vineyard	Up to 8 tons	Up to 1	Day Spring-Fall
Oils (Mildew control)	Locked down railroad container	Spray	Vineyard	1 to 2 gallons	Up to 4	Day Spring
Wettable Sulfur (Mildew control)	Locked down railroad container	Spray	Vineyard	4 pounds	Up to 6	Night Spring
Roundup (Herbicide)	Locked down railroad container	Spray	Under vinerow	2.5 quarts	Up to 3	Day Spring/Summer
Serenade (Fungicide)	Locked down railroad container	Spray	Vineyard	2 pound	4	Day Spring-Summer
Nordox (Fungicide)	Locked down railroad container	Spray	Vineyard	1.25 pounds	3	Day Spring-Summer
PCQ (Rodenticide)	Locked down railroad container	Bait in traps	Vineyard & existing dam	¼ to ½ oz/ bait station	Up to 5	Day Year-round

Source: ECPA, 2006

## 4.5.2 REGULATORY FRAMEWORK

### 4.5.2-1 FEDERAL

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) governs the sale, distribution and use of pesticides in the United States. Pesticides are regulated under FIFRA until they are disposed, after which they are regulated under the Resource Conservation and Recovery Act (RCRA), which ensures responsible management of hazardous and nonhazardous waste (EPA, 2006). Some, but not all, pesticides are regulated as hazardous waste when disposed. FIFRA was enacted in 1947, and significantly amended in 1972 and 1996, to provide federal control of pesticide distribution, sale, and use. FIFRA requires that each manufacturer register each pesticide and its label with the U.S. Environmental Protection Agency (EPA) before it can be manufactured for commercial use.

The Occupational Safety and Health Administration (OSHA) was created to ensure worker safety and health in the United States by working with employers and employees to create better working environments. Section 1919, Subpart H-Hazardous Materials of the Occupational Safety and Health Act of 1970 provides information and guidelines for working with hazardous materials (OSHA, 1970). All employees at the project site will be trained in proper methods of working with hazardous materials.

The U.S Department of Transportation has the authority to regulate all safety aspects of hazardous materials transportation in accordance with the Hazardous Materials Transportation Act of 1975 (Napa County, 1983). The Motor Carrier Act of 1980 requires carriers of hazardous materials to demonstrate their ability to pay for damages sustained from an accident involving such materials by means of adequate insurance. The California Highway Patrol regulates transportation of hazardous materials in California. Fertilizers and petroleum fuel that are used on the project site are delivered onsite by licensed contracted delivery companies.

### 4.5.2-2 STATE

The California Department of Pesticide Regulation (DPR) protects human health and the environment by regulating pesticide sales and use and fostering reduced-risk pest management. Oversight by DPR includes product evaluation and registration, environmental monitoring, residue testing of fresh produce, and local use enforcement through county agricultural commissioners. DPR's regulations of pesticide use on the project site would be regulated through the policies of the Napa County Agricultural Commissioner.



The Resources Conservation and Recovery Act (RCRA) of 1976 and the California Health and Safety Code authorize the California Department of Toxic Substance Control (DTSC) to regulate the handling, storage, transportation, and disposal of hazardous substances. DTSC regulations of hazardous materials use on the project site would be followed through the local Certified Unified Program Agencies (CUPAs) as described below.

Senate Bill 1082 required the establishment of a unified hazardous waste and hazardous materials management program. The result was the California Environmental Protection Agency (CalEPA) Unified Program. The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of six environmental and emergency response programs. The state agencies responsible for these programs set the standards for their program, while local governments implement the standards. CalEPA oversees the implementation of the program as a whole (CalEPA, 2006). The Unified Program is implemented at the local level by 85 government agencies certified by the Secretary of CalEPA. These Certified Unified Public Agencies (CUPAs) have typically been established as a function of a local environmental health or fire department. The proposed project will comply with the Unified Program through the Napa County Department of Environmental Management (DEM).

To comply with Title 22 of the California Code of Regulations (CCR) (66262.34(f)), hazardous waste containers must be marked with specific information. This regulation applies to the proposed project because waste oil will be stored at the project site.

A valid Hazardous Materials Transportation License is required by the laws and regulations of the State of California (Vehicle Code Section 32000.5) for the transportation of either:

- Hazardous materials shipments for which the display of placards is required; or
- Hazardous materials shipments of more than 500 pounds (being transported for a fee), which would require placards if shipped in greater amounts in the same manner.

All motor carriers and drivers involved in the transportation of hazardous materials must comply with the requirements contained in federal and state regulations, and must apply for and obtain a hazardous materials transportation license from the California Highway Patrol (CHP) (CHP, 2000). Fertilizers and petroleum fuel that are delivered onsite by the contracted delivery companies are responsible for complying with the state and federal regulations.

#### 4.5.2-3 LOCAL

The Napa County DEM is the CUPA for Napa County, including all of its cities (Napa County, 2006). As the CUPA, the DEM administers the following Unified Programs:

- Hazardous Materials Release Response Plans and Inventory (Business Plan) Program;
- California Accidental Release Prevention Program (CalARP);
- Underground Storage Tank Program;
- Hazardous Waste Generator and Hazardous Waste Onsite Treatment Programs; and
- AST Program (Spill Prevention, Control and Countermeasure (SPCC) Plans)

Through the enactment of Assembly Bill 2185 in 1985, the Business Plan Program was developed, commonly known as the Hazardous Materials Business Plan (HMBP) or Community Right to Know Program. The purpose of the program is to make available to the public information on what hazardous materials are being handled at businesses in the community, provide information to emergency responders on what hazardous materials are handled at a facility, and provide training to employees in how to handle a release or threatened release of hazardous materials at a facility. There are currently 1,138 facilities in Napa County subject to the HMBP program. The DEM began countywide implementation of this program in 1989. The DEM requires businesses that store hazardous materials above the minimum reportable quantities (a total weight of 500 pounds for solids, a total volume of 55 gallons for liquids, and 200 cubic feet for compressed gases) to have a HMBP. The HMBP consists of owner/operator information, chemical inventory, and an emergency response plan and maps. The proposed project is subject to the HMBP, as oil, gasoline and diesel fuel are stored onsite in excess of 55 gallons, as discussed in the setting section.

The CalARP Program regulates facilities that handle extremely hazardous materials in quantities that are greater than state or federal planning standards. The purpose of the program is to reduce the incidences of releases of extremely hazardous materials and decrease the impact of a release. A Restricted Materials Permit is required for hazardous materials listed on the Regulated Substances List, and if the quantity of hazardous materials stored or handled onsite are greater than the regulated limit. If a permit were required, a Risk Management Plan would need to be submitted. The hazardous materials used on the project site are not listed on the Federal Regulated Substances List; therefore, the proposed project is not subject to the CalARP Program.

There are approximately 175 permitted hazardous waste generator facilities in Napa County. They range from large quantity generators (greater than 1,000 kilograms of hazardous waste per month), to small quantity generators (less than 1,000 kilograms of

hazardous waste per month), to conditionally exempt small quantity generators (less than 100 kilograms of hazardous waste per month).

The Napa County Agricultural Commissioner and staff are responsible for the implementation of federal, state and local hazardous materials regulatory programs within Napa County. The Agricultural Commissioner is authorized to enforce the laws administered by the DPR. The Agricultural Commissioner requires a private applicator certificate for restricted materials (pesticides) use. To obtain a private applicator certificate an exam must be taken, which is administered through the Agricultural Commissioner. The private applicator certificate allows purchase and use of California restricted materials and the authority to perform required training of pesticide handlers and field workers. The certificate is valid for a three-year period and may be renewed through continuing education or by re-examination. Restricted materials permits are required for commercial use of certain pesticides and must be renewed annually. Pesticide use reports must be submitted to the Napa County Agricultural Commissioner on the 10<sup>th</sup> of the month following application.

Safety issues associated with transportation of hazardous substances are discussed in the Safety Element of the Napa County General Plan. The following safety and conservation policies are listed in the General Plan (Napa County, 2008):

- Policy SAF-5: The County shall cooperate with other local jurisdictions to develop intra-county evacuation routes to be used in the event of a disaster within Napa County.
- Policy SAF-30: Potential hazards resulting from the release of liquids (wine, water, petroleum products, etc.) from the possible rupture or collapse of aboveground tanks should be considered as part of the review and permitting of these projects.
- Policy SAF-31: All development projects proposed on sites that are suspected or known to be contaminated by hazardous materials and/or are identified in a hazardous material/waste search shall be reviewed, tested, and remediated for potential
- Policy CON-2 (e): Encourage inter-agency and inter-disciplinary cooperation, recognizing the agricultural commissioner's role as a liaison and the need to monitor and evaluate pesticide and herbicide programs over time and to potentially develop air quality, wildlife habitat, or other programs if needed to prevent environmental degradation.
- Policy CON-2 (f): Minimize pesticide and herbicide use and encourage research and use on integrated pest control methods such as cultural practices, biological control, hose resistance and other factors.

### 4.5.3 IMPACTS AND MITIGATION MEASURES

The CEQA *Guidelines* list a series of threshold criteria to analyze hazards and hazardous materials impacts resulting from a project. This section considers only the criteria that involve use of hazardous materials, which are directly applicable to the project. Several issues discussed above that were determined to have no impact or less-than-significant impact from the proposed project are not included in this discussion.

#### 4.5.3-1 SIGNIFICANCE CRITERIA

For purposes of this analysis, an impact is considered significant if the proposed project would:

- Create a significant hazard to the public or the environment through routine transport, use or disposal of hazardous materials; or
- Create a significant hazard to the public or the environment through reasonable foreseeable upset and accident conditions involving release of hazardous materials into the environment.

#### 4.5.3-2 IMPACTS AND MITIGATION MEASURES

**Impact 4.5-1:** The proposed project would include the storage of hazardous materials above the minimum reportable quantities in the HMBP (Napa County, 2006). There is potential for incidental AST leakage, rupture and spillage when fueling agricultural equipment, which could result in hazards to the public or environment. If substantial quantities of diesel or unleaded gasoline reach soil or drainage areas, surface and/or groundwater quality may be degraded. This is a potentially significant impact.

**Mitigation Measure 4.5-1:** Prior to the development of the proposed project, the owner of Circle S Ranch would prepare a HMBP for proposed hazardous materials onsite. If storage amount or use of hazardous materials change during project operation, the project owner shall update, as necessary, the HMBP. The HMBP should include:

- An inventory of the type and quantity of hazardous materials stored onsite;
- A site map;
- Risks of using the hazardous materials;
- Spill prevention methods;
- Emergency response plan;
- Employee training; and
- Emergency contacts.

The plan should also include a review of each chemical used onsite and a determination on whether any substitution for the chemicals (more eco-friendly) can be made; changes should be made as appropriate. The hazardous materials inventory, site map, emergency response plan, business owner form, and business activities form must be submitted to the DEM. If there is any change in storage of a hazardous material or 100 percent increase in quantity of a hazardous material the DEM must be notified within 30 days. An employee training record must be filed onsite and would be inspected by the DEM once every three years.

Implementation of the mitigation measure above reduces this potentially significant impact to a less-than-significant level.

**Impact 4.5-2:** The potential release of hazardous materials into the environment during construction of the proposed project through the use of equipment is a potentially significant impact.

During construction activities, the use of hazardous materials would include substances such as gasoline, diesel fuel, motor oil, and hydraulic fluid. Fueling and oiling of construction equipment would be performed daily. The most likely possible hazardous materials releases would involve the dripping of fuels, oil, and grease from construction equipment. The small quantities of fuel, oil, and grease that may drip from properly maintained vehicles would occur in relatively low toxicity and concentration. No long-term effects to the soil or groundwater would occur. Typical construction management practices limit and often eliminate the effect of such accidental releases. An accident involving a service or refueling truck would present the worst-case scenario for the release of a hazardous substance. Depending on the relative hazard of the material, if a spill of significant quantity were to occur, the accidental release could pose a hazard to construction employees, as well as to the environment. Such a release could result in a potentially significant impact. Potentially significant impacts during temporary construction activity can be mitigated to less than significant through the implementation of standard operating procedures (SOPs) intended to eliminate construction related pollutants from leaving the construction site. Specific project objectives associated with the implementation of #P06-01508-Agricultural Erosion Control Plan Application (ECPA) are identified within the project description. These measures as well as the SOPs described below will ensure potential impacts remain less than significant.

**Mitigation Measure 4.5-2:** In addition to the erosion control measures that are outlined in **Table 3-3**, personnel shall follow written SOPs for filling and servicing construction equipment and vehicles. The SOPs, which are designed to reduce the potential for incidents involving hazardous materials, shall include:

- Refueling shall be conducted only with approved pumps, hoses, and nozzles.
- Catch-pans shall be placed under equipment to catch potential spills during servicing.
- All disconnected hoses shall be placed in containers to collect residual fuel from the hose.
- Vehicle engines shall be shut down during refueling.
- No smoking, open flames, or welding shall be allowed in refueling or service areas.
- Refueling and all construction work shall be performed outside of the stream buffer zones to prevent contamination of water in the event of a leak or spill.
- Service trucks shall be provided with fire extinguishers and spill containment equipment, such as absorbents.
- A spill containment kit that is recommended by the DEM or local fire department will be onsite and available to staff if a spill occurs.

In the event that contaminated soil and/or groundwater or other hazardous materials are generated or encountered during construction, all work shall be halted in the affected area and the type and extent of the contamination shall be determined. Should a spill contaminate soil, the soil shall be put into containers and disposed of in accordance with federal, state, and local regulations. If containment and size of the spill is beyond the scope of the contractor, proper authorities shall be notified. The potential release of hazardous materials during construction of the proposed project is reduced to a less-than-significant level with the implementation of the mitigation measures above.

**Impact 4.5-3:** The potential release of hazardous materials into the environment during operation and maintenance of the vineyard is a potentially significant impact.

During vineyard operation, the use of hazardous materials would potentially include substances such as gasoline, diesel fuel, motor oil, pesticides, and fertilizers. Hazardous materials releases from storage are discussed above in **Impact and Mitigation Measure 4.5-1**. Hazardous materials impacts and mitigation measures associated with pesticides are discussed below in **Impact and Mitigation Measure 4.5-4**. Hazardous materials releases from operation and maintenance of the vineyard may occur from dripping of fuels, oil, grease, pesticides, and fertilizers from farm equipment. The small quantities of hazardous materials that may drip from properly maintained equipment would occur in relatively low toxicity and concentration. It is not likely that significant impacts to soil or groundwater would occur.

Napa County DEM promotes best management practices (BMP) to reduce hazardous material contamination of surface and groundwater. The proposed project would be operated in a manner that is consistent with Napa County DEM requirements. As discussed in **Chapter 4.2 Biological Resources**, stream setbacks are proposed consistent with Napa

County stream setback requirements, based on slope; setbacks of 20 feet would be maintained around drainages that do not meet Napa County's definition of a stream; and 50-foot minimum setbacks would be maintained around all wetlands. No vineyard operation or maintenance activities would occur in the buffer zones. During storm events, the buffer zone would act as a filter to reduce the potential for petroleum products, pesticides, or fertilizers to reach waters of the U.S. and drainages onsite.

The existing shop compound on the property would be used for maintenance and fueling of farming equipment. As proposed, all farm equipment would be cleaned in a washing area that is located away from wells and surface water within the vineyard footprint. Rinse water containing potentially harmful pollutants would have the potential to significantly impact human health or the environment if not contained properly.

**Mitigation Measure 4.5-3:** In addition to **Mitigation Measures 4.5-1, 4.5-2, 4.5-4, and 4.5-5**, a rinse water containment area should be established outside the proposed setbacks and away from any areas that could potentially drain off site or potentially affect surface and groundwater quality. When farm equipment is cleaned, only rinse water that is free of gasoline residues, pesticides and other chemicals, and waste oils should be allowed to diffuse back into the vineyard area. All other rinse water from farm equipment and rinse water from equipment used to apply chemicals such as pesticides, herbicides and fungicides should be collected and stored in containers that are of sufficient size to contain the water until a hazardous materials transporter can remove the rinse water. No rinse water shall be drained to a septic system or discharged to ground or surface water to prevent the release of hazardous materials into the environment during operation and maintenance of the proposed project. Impacts after mitigation are less than significant.

**Impact 4.5-4:** The proposed project may include the use of pesticides for vineyard maintenance. The owner would apply for a private applicator certificate and a restricted materials permit from the Napa County Agricultural Commissioner. The owner would comply with the Napa County Agricultural Commissioner's regulations, such as renewing the private applicator certificate every three years and restricted materials permits annually, reporting pesticides use to the Agricultural Commissioner by the 10<sup>th</sup> of every month following application. All vineyard employees shall be trained annually in the proper use of pesticides. Non-compliance with hazardous materials regulations including improper pesticide use, storage or disposal can be hazardous to human health and the environment. This is a potentially significant impact.

**Mitigation Measure 4.5-4:** Personnel shall follow SOPs when applying pesticides to the vineyard. SOPs for pesticide use, shall include the following:

- Purchase only enough pesticide that would be used per season.
- Utilize IPM techniques where feasible, such as the use of a permanent cover crop, beneficial insects, and minimal to no use of pesticides except when found necessary from monitoring and for fungicides.
- All pesticides will be stored in their original containers. Labels on the containers will not be removed.
- Pesticides will be kept in a well-ventilated locked area.
- Pesticide storage areas will be 100 feet from any drainage area, stream, or groundwater well.
- The best way to dispose of a small amount of pesticide is to use it. If a pesticide must be disposed of, contact the Napa County Agricultural Commissioner to locate a hazardous waste facility for proper disposal.
- Pesticides will never be poured down the sink, toilet, or stream.
- Proper personal protection equipment will be utilized when working with pesticides.

The mitigation measures above reduce potential impacts from pesticide use to a less-than-significant level.

**Impact 4.5-5:** The current vineyard operations produce approximately 845 kilograms (0.93 tons) of waste oil per year. The proposed project would increase the annual amount of waste oil generated to approximately four tons (or approximately 400 gallons of oil). The waste oil would continue to be stored onsite and picked up regularly by a waste oil recycler with the proposed project. Improperly stored waste oil could cause significant impacts to the environment if not contained and disposed of properly. This is a potentially significant impact that can be reduced to a less-than-significant level through proper onsite storage and offsite recycling.

**Mitigation Measure 4.5-5:** Waste oil containers should be stored in secondary containment that includes an oil-impervious bermed area or liner, retaining wall, and/or an impervious concrete floor. The waste oil containers should be covered during rain events and not be stored within the setbacks described in **Impact 4.5-3** above. Waste oil containers should be labeled "waste oil". The containers should also be labeled with the following information: accumulation start date; the hazardous properties of the waste (i.e. flammable, corrosive, reactive, toxic, etc.); and the name and address of the facility generating the waste. All waste oil containers should be transported offsite by a licensed transporter and taken to a waste oil recycling facility. This potentially significant impact is reduced to a less-than-significant level with the implementation of the mitigation measure above.



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## 4.6 HYDROLOGY AND WATER QUALITY

### 4.6.1 SETTING

#### 4.6.1-1 CLIMATE

The Napa Valley region has a Mediterranean climate characterized by warm, dry summers and cold, wet winters. The vast majority of the precipitation occurs in the form of rain, but snow is not uncommon at higher elevations and generally does not persist for more than a few days following a storm event. Approximately 90 percent of annual precipitation occurs as rain that falls during the winter and early spring from November to April. Annual precipitation varies significantly from year to year, and deviations can be as high as 200 percent from the 85-year average. In general, precipitation varies significantly throughout Napa County ranging from 22.5 inches per year (in/yr) to 75 in/yr, increasing from south to north and with higher elevations (Napa County, 2005). The greatest rainfall intensity is in the mountains along the northern and western edges of Napa County. For 100-year, six-hour and 24-hour storm events, the maximum precipitation is predicted to range from 5.0 to 14.0 inches (Napa County, 2005). Between 1961 and 1990, the average annual precipitation was 35 to 40 inches in the western portion of the Napa River watershed, and 20 to 25 inches in the eastern portion of the Napa River watershed. Precipitation decreases southward through the Napa Valley with average annual precipitation equal to 38 inches at Calistoga, 35 inches at St. Helena, and 25 inches at the Napa State Hospital (Stillwater Sciences and W. Dietrich, 2002).

#### 4.6.1-2 SURFACE WATERS

The topography of Napa County consists of a series of parallel northwest-trending mountain ridges and intervening valleys of varying sizes. These parallel northwest-trending mountain ridges subdivide the County into three principal watersheds: Napa River watershed, Putah Creek/Lake Berryessa watershed, and Suisun Creek watershed. The Circle S Ranch is located in the eastern portion of the Napa River watershed. The Napa River watershed extends in a northwesterly direction roughly 45 miles from San Pablo Bay to the hills north of Calistoga, and includes primarily a central valley floor and eastern and western mountains to either side of the valley floor. The watershed is contained by Mt. St. Helena to the north, the Mayacamas Mountains to the west, Howell Mountain, Atlas Peak, and Mt. George to the east, and the Napa-Sonoma Marsh to the south. The Napa River, the largest river in Napa County, drains numerous tributaries of the watershed along a 55-mile stretch from its headwaters of Mt. St. Helena to the San Pablo Bay where it empties to the south. The lowest reaches of the Napa River and tributaries in the lower Napa Valley are tidally influenced due to the proximity to San Pablo Bay. Along the Napa River, the tidal influence is observed northward into the City of Napa.

In general, tributaries to major drainages form canyons in their steeper upstream reaches, where they flow over the more resistant bedrock of the mountainous areas. In terms of geomorphic form, Napa County streams typically descend from steep headwater reaches onto alluvial fan surfaces and then onto valley floors. Some of the upstream reaches of tributaries are intermittent, and others are perennial. The downstream reaches, especially of the larger streams, are generally perennial. Stream flows generally peak in January or February and are lowest from August through November. Average and maximum stream flows are scaled with drainage areas.

There are 28 dams in the Napa River watershed with individual water storage capacities greater than 28 acre-feet (af) (Stillwater Sciences et al., 2002). Seventy-one percent of the total reservoir storage in the watershed is in Conn Creek Reservoir (Lake Hennessey). Other significant dams include Rector Creek, Bell Canyon, and Milliken Creek dams. All of these dams are located on the tributary streams along the eastern side of the watershed, and effectively block every major east side tributary between St. Helena and Napa, except Soda Creek.












### **Milliken Reservoir Watershed**

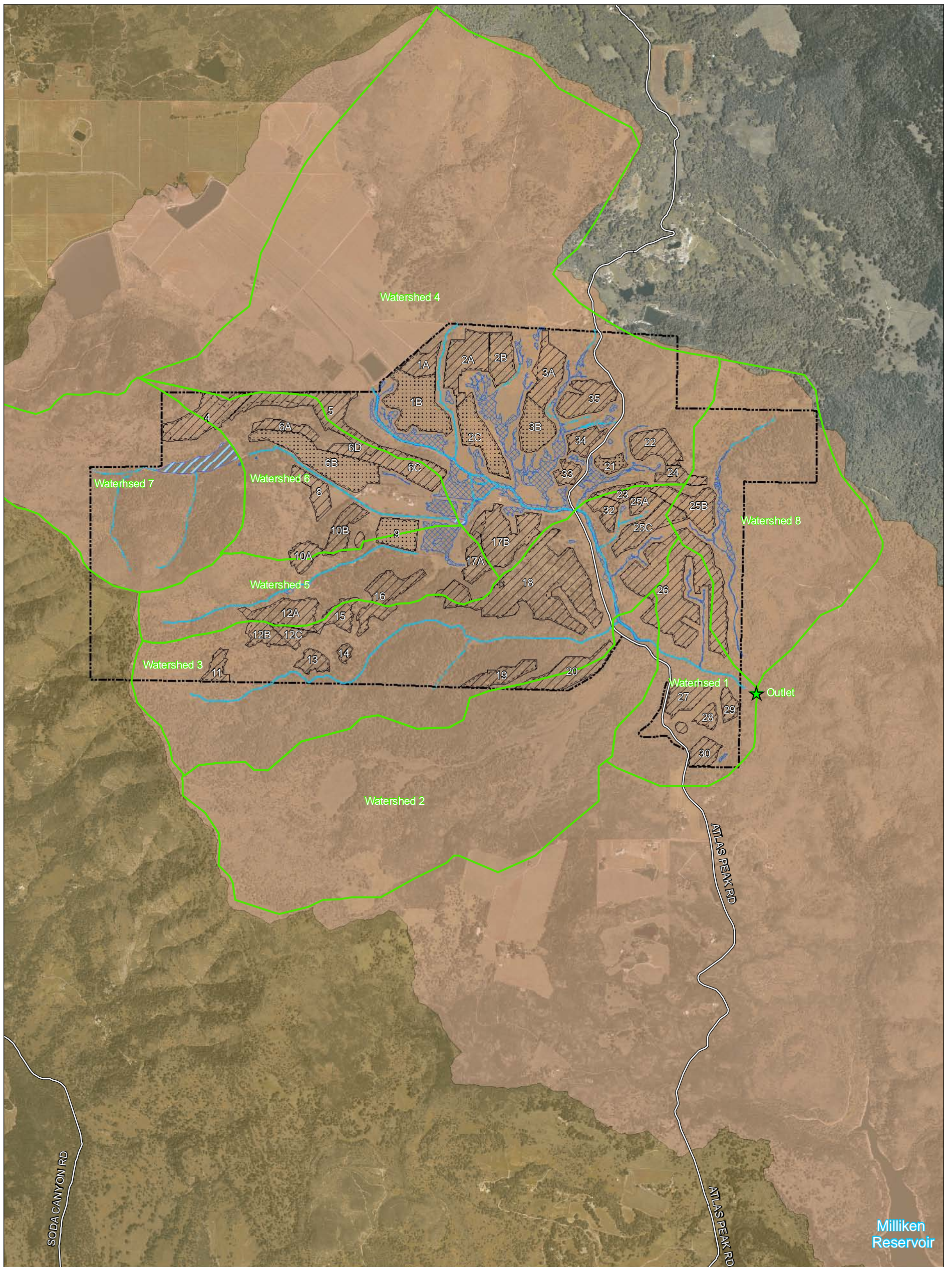
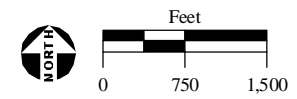
The project site is located within the Milliken Reservoir watershed, which is a subwatershed of the Napa River watershed (**Figure 4.6-1**). Milliken Reservoir watershed drains an area of approximately 6,141 acres to the Milliken Reservoir. Milliken Reservoir has been designated as a municipal drinking water supply reservoir for the City of Napa, which operates a diversion approximately two-miles downstream from the reservoir. The Circle S Ranch is located in the northern portion of the watershed. The primary drainage feature of Milliken Reservoir watershed is Milliken Creek, which flows from the Foss Valley and Atlas Peak Vineyards property through a pipe entering the project site in the north. The creek then continues southward relatively parallel to Atlas Peak Road and eventually flows offsite, where it travels about 1.5 miles and discharges into Milliken Reservoir before redistributing flows to the Napa River. Several ephemeral drainages flow into Milliken Creek on the project site from upland areas in the east and west. Collectively these tributaries drain almost the entire Circle S Ranch, except for a small portion in the southwest corner, where no development has occurred or would occur with the proposed project.

#### *Circle S Ranch Drainage*

**Figure 4.6-1** shows the delineation of onsite tributaries into individual drainage areas. The project site contains 62 acres of seasonal wetlands, which are limited to the main Foss Valley area. Along one of the longer tributaries in the northwest portion of the project site there is a 131 acre-foot (af) capacity reservoir and closer to Milliken Creek, just after the confluence with another tributary, a two af capacity stockpond.

**LEGEND**

- |  |  |  |   |
|--|--|--|---|
|  Property Boundary      |  Other Drainages    |  Milliken Reservoir Watershed | <b>Proposed Vineyard Blocks</b>   |
|  Project Site Drainages |  Wetlands           |  Napa River watershed         |  Slopes Greater Than 5% and Included in ECPA  |
|  USGS Streams           |  Existing Reservoir |  |  Slopes Less Than 5% and Not Included in ECPA |
|  |  |  |  Vineyard Avenues                             |



Both channeled and unchanneled hydrologic networks occur on the project site. The channeled network consists of hydrologic pathways with permanent stream banks, and is comprised of the USGS blueline watercourses onsite. The total length of the open-flow network is 94,450 feet (Trso, 2008). The unchanneled network, which consists of hydrologic pathways for overland flows during high-intensity and long-duration storm events, is comprised of several zero-order (ephemeral) colluvial swales and areas of convergent topography. The total length of this network is 17,320 feet (Trso, 2008). There are also 13,800 feet of wetland flow pathways (Trso, 2008), which are associated with the extensive wetlands onsite, and solely located within the alluvial fan and valley-fill landforms (as discussed in **Chapter 4.4**).

Two of the alluvial fan watercourses located in the northern portion of the valley turn into subsurface flow and wetlands in the area of the fan apex. This results in a total of 272 acres or 0.4 square-miles of the project site being disconnected from Milliken Creek for surface runoff and sediment yield. This portion of the project site consists of an area of about 184 acres, including proposed Blocks 2A, 2B, 3A, and 3B, as well as another smaller alluvial valley that includes proposed Blocks 21, 22, 24, and small portions of vineyard Blocks 23 and 32.

### **Channel Morphology and Stability**

In Milliken Creek, channel erosion is naturally inhibited in most locations due to bedrock in the channel bed. However, limited channel incision and bank widening currently occurs at two 100-meter long reaches on the project site, probably resulting from the historic diking of the creek within Atlas Peak Vineyards property, and/or livestock trampling. Continued livestock grazing at the project site would cause further trampling-related mechanical disturbance, which would likely promote systemic bank widening along Milliken Creek and impact the seasonal wetlands and vernal pools in Foss Valley. The upland channel reaches are steep, confined and hydraulically rough due to coarse substrate and riparian vegetation. Based on field assessments, the upland channels experience high shear stress during runoff events, have high sediment transport capacity, and are resilient to changes in discharge and sediment supply. The stream morphologies of the unchanneled hillslope hydrologic network are characterized as zero-order swales. Based on field assessments, these ephemeral channels are located in areas that are likely to produce overland flow during wet winters or high-intensity and long-duration precipitation events. These areas also deliver runoff and sediment supply to the onsite watercourses. The stream morphology of the wetland flow pathways is characterized as swampy riffle-step. The channel bed is mostly mixed grass-lined gravel, with abundant sand deposits. Based on field assessments, the wetlands experience very low shear stress during runoff events, yielding low sediment transport capacity, thus acting as sediment sinks.

## Runoff Potential

The primary landscape features affecting the volume and rate of runoff are soil type, land use, vegetative cover, and slopes. Several different types of soils are located on the project site, as discussed in **Chapter 4.4**. Soils located on hills and terraces at the project site are classified as being well drained to excessively drained and having medium to high potential for surface runoff. Soils located on alluvial fans at the project site are classified as being somewhat poorly drained and having low potential for surface runoff.

Different land uses consist of different types and extent of vegetative cover that influence runoff from an area. Currently, the project site consists of existing vineyards, agricultural facilities and equipment storage areas, access roads, grasslands including livestock grazing areas, and several other heavily vegetated areas. Habitats with dense vegetation coverage disperse runoff by intercepting precipitation and providing obstacles to the concentration of runoff. Vineyard areas consist of a pattern of horizontally aligned vine rows and cover crop that also provide interceptors and obstacles to runoff, but typically to a lesser extent than very dense vegetative habitats. Areas that have been historically and are currently used for livestock grazing characteristically have trampled and broken vegetation, which reduces obstacles to runoff and increases the pathways for runoff and areas for runoff to concentrate. Roads often provide areas where runoff can concentrate easier because of the lack of interceptors and obstacles to runoff. However, Atlas Peak Road and the majority of the remaining roads onsite are hydrologically disconnected from Milliken Creek. Since the project site contains areas with steep slopes, any runoff that is allowed to concentrate after flowing over soils in these areas would be expected to flow easily to onsite drainages.

## Flooding

Napa County is a flood-prone region because it has a Mediterranean climate of wet winters and dry summers and a landscape of steep hills and a wide valley floor. Flooding from tidal fluctuations in Napa County can also occur, but is limited to areas in the lowland sloughs of the southern portion of the County. The Federal Emergency Management Agency (FEMA) has mapped flood zones in Napa County for 100- and 500-year flood events. The Circle S Ranch is not located within any FEMA designated flood zones. Trso (2008) also evaluated the potential for flooding at the project site from geomorphic mapping and observations. Mapping identified potential flood hazards in alluvial fan areas within the Foss Valley portion of the project site. Field observations revealed potential flood hazards within the northern portion of the Foss Valley, specifically in the areas around the unconfined stream that parallels the boundaries of proposed Blocks 1A, 1B, 2A and 2B.

## Surface Water Quality

### *Sediment Loading*

Runoff from the project site is eventually transported to the Napa River, which is currently listed as an impaired water body for nutrients, pathogens and sediment under Section 303 (d) of the Clean Water Act (CWA). The construction of several large dams between 1924 and 1959 on major tributaries in the eastern Napa River watershed and northern headwater areas of Napa River has affected sediment transport processes into the mainstem Napa River by reducing the delivery of the coarse load sediments to the river. Thirty percent of the Napa River watershed drains into dams, such that ponds and reservoirs behind these dams capture a significant fraction of all sediment input to channels (SFRWQCB, 2007a).

Historically, the Napa River system was typically a gravel-bed river that over time has become increasingly dominated by finer sediments. The sources for these finer sediments include a variety of land use, infrastructure, and in-stream erosion sediment sources. Dams in the area that trap sediment have not significantly reduced the degree to which finer sediments are being delivered to the watershed. As a result of this fine sedimentation, habitats for steelhead, Chinook salmon, and Californian freshwater shrimp, which rely on more gravel substrate in the river, have been negatively affected from reduced gravel permeability (Stillwater Sciences and W. Dietrich, 2002). The Regional Water Quality Control Board, San Francisco Bay District (SFRWQCB) has released a technical report that proposes a total maximum daily load (TMDL) for the Napa River that calls for substantial reductions in the amount of fine sediment input from the watershed to improve the water quality and maintain beneficial uses of the river, including spawning and rearing habitat for salmonid species.

### *Temperature*

Parameters that influence stream temperature include ambient air temperature, humidity, riparian vegetation, topography, surrounding land uses, and flow conditions. Water temperature influences a number of chemical processes within water bodies. Streams in Mediterranean climates, such as in Napa County, experience naturally low summer flows that translate to higher water temperatures, resulting in watersheds that are susceptible to impacts of high water temperatures. Additionally, land development often alters channel geomorphology, which in turn creates conditions that cause water temperatures to rise and habitat to degrade. These activities include the removal of riparian shading, reduced cold-water inputs (i.e. altered groundwater supplies), and increased surface runoff.

The Napa River watershed currently provides habitat for cold-water anadromous fish species, including steelhead trout and Chinook salmon. Water temperature is a key constituent for assessing the quality of water within the Napa River watershed. Steelhead

and Chinook salmon are highly sensitive to temperature and require cold water throughout the majority of their life stages. Mainstem and tributary temperatures are elevated to a level that can cause stress to salmonids, but not high enough to be acutely lethal. Elevated temperature conditions contribute to reduced habitat conditions for salmonids, particularly when combined with low summer base flows and aggraded channels (raised from sediment).

### *Nutrients*

Nutrients, specifically nitrogen and phosphorus, are essential for life and play a primary role in ecosystem functions. In addition to naturally present concentrations in the atmosphere and organic matter, nutrients are introduced to waterbodies through human or animal waste disposal or agricultural application of fertilizers. Nutrients are commonly the limiting factor for growth in aquatic systems. Excessive levels of nutrients affect aquatic systems in a wide range of ways, including producing toxic or eutrophic conditions, both of which impair aquatic life. The Napa River is identified as impaired by nutrient loading according to Section 303 (d) of the CWA, as discussed in the Regulatory Framework section below. Wang et al. (2004) identified numerous nutrient load contributors, including point sources such as wastewater treatment plants, and non-point sources such as septic system seepage, agricultural and urban runoff, and atmospheric deposition. No specific numeric nutrient targets for the Napa River watershed have been established by the SFRWQCB. Historical and current livestock grazing activities at the project site are likely introducing increased levels of nutrients through animal waste. Additionally, trampling of grasslands and other vegetation by livestock increases the potential for erosion above natural levels, which could be contributing to greater nutrient inputs to waterways associated with sediment loadings.

### *Pathogens*

High concentrations of fecal bacteria have been recorded in the Napa River since the 1960s. Consequentially, the SFRWQCB identified the Napa River as impaired by pathogens according to Section 303 (d) of the CWA. Sources that contribute to the significant pathogen loads in the watershed include faulty onsite sewage treatment systems, failing sanitary sewer lines, municipal runoff, and livestock grazing. Past monitoring efforts indicate that urban runoff and failing septic systems are the primary pathogen sources during wet weather months, while failing sanitary sewer lines and septic tanks may constitute the primary pathogen sources during the dry season. To address this issue, a TMDL has been developed for the Napa River and its tributaries, which implements density-based targets and zero discharge of untreated or inadequately treated human waste. Onsite waters could potentially have increased levels of pathogens due to historic and current livestock grazing activities onsite, as discussed in the nutrients section above.



#### 4.6.1-3 GROUNDWATER

















The project site is not located in a delineated groundwater basin. Groundwater available to the project site is limited to the extent of Sonoma Volcanics bedrock in the region (**Figure 4.6-2**). The Sonoma Volcanics are a diverse group of volcanic rocks of differing lithology and chemistry. Within Napa County, these rocks are well known to provide groundwater for water wells and represent the principle water bearing geologic formation in the region. Sonoma Volcanics generally contain groundwater in fractures and joints, in zones of deep weathering, along remnant flow channels, and between individual flow units that developed during periods between successive volcanic events. Due to the nature of groundwater occurring in these rocks, the amount of groundwater available to wells in the volcanic materials is highly dependent on such factors as well depth, as well as the size, frequency, openness, lateral continuity and degree of interconnection of the fractures and joints encountered in the rocks at a specific site. To the northeast of the Circle S Ranch, fine-grained shale of the geologically ancient Franciscan Formation exists. The Franciscan Formation is considered to underlie the Sonoma Volcanics 700 to 800 feet beneath the project site. This formation tends to display low permeability and has a very limited ability for providing groundwater to wells, and is therefore considered to be the non-water bearing bedrock of the area (RCS, 2007).

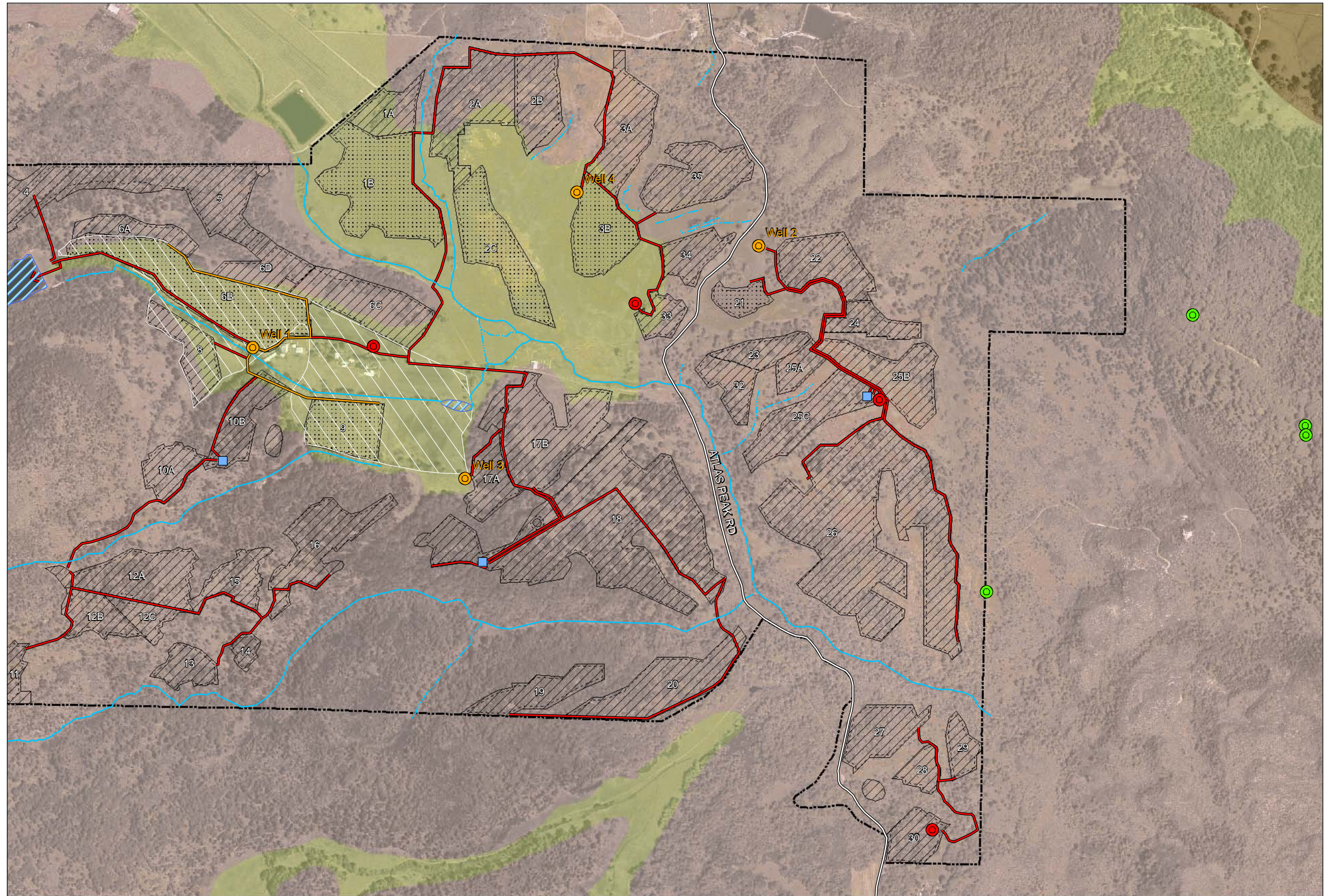
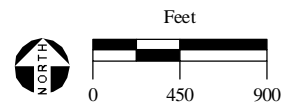
Alluvium is found as unconsolidated recent sedimentary deposits located within and along the creek channels in the Foss Valley. Alluvial deposits consist of layers of silt, clay, sand and gravel that contain occasional cobbles. The onsite alluvial deposits are not considered to be a viable source of groundwater since the alluvium along Milliken Creek and the flat-lying areas on both sides of the creek is not laterally extensive, and it is likely less than 10 feet in thickness.

#### **Groundwater Resources**

In regional basins, municipal and irrigation wells have average depths ranging from about 200 to 500 feet. Well yields in these basins range from less than 50 gallons per minute (gpm) to approximately 3,000 gpm. The Napa-Sonoma Valley groundwater basin is one of the more heavily utilized basins in the region for groundwater supply. Groundwater data from the Napa Valley subbasin shows well yields at a maximum of 3,000 gpm and an average of 223 gpm (DWR, 2003). The North Napa Valley Basin (NNVB) is by far the most productive aquifer in the basin, which can locally provide water to wells at rates in excess of 3,000 gpm. Wells tapping the tuffaceous volcanic aquifer yield water at an average rate of 32 gpm (Napa County, 2005).

**LEGEND**

-  Existing Onsite Groundwater Well
-  Existing Offsite Groundwater Well
-  Proposed Onsite Groundwater Well
-  USGS Streams
-  Other Drainages
-  Existing Reservoir
-  Proposed Water Storage Tank
-  Existing Irrigation Pipeline
-  Proposed Irrigation Pipeline
-  Place of Use, Licenses 11041 & 11507
-  Property Boundary
- Proposed Vineyard Blocks**
-  Vineyard Avenues
-  Slopes Greater Than 5% and Included in ECPA
-  Slopes Less Than 5% and Not Included in ECPA
- Geology**
-  Great Valley Complex (Cretaceous - Jurassic)
-  Late Tertiary Assemblages; Sonoma Volcanics (Pliocene-Miocene)
-  Surficial deposits (Quaternary)



**Figure 4.6-2**  
Water Supply Setting

## Groundwater Quality

In general, groundwater quality throughout most of the San Francisco hydrologic region is suitable for most urban and agricultural uses with only local impairments. The primary constituents of concern are high total dissolved solids (TDS), nitrate, boron, and organic compounds. Releases of fuel hydrocarbons from leaking underground storage tanks and spills/leaks of organic solvents at industrial sites have caused minor to significant groundwater impacts in many basins throughout the region. Methyl tertiary-butyl ether (MTBE) and chlorinated solvent releases to soil and groundwater continue to be problematic. Areas of high TDS (and chloride) concentrations have typically been found in groundwater basins situated close to the San Francisco Bay including the Napa Valley. Specifically, groundwater with high TDS, iron, and boron levels in other parts of Napa Valley make the water unfit for agricultural uses (DWR, 2003).

A sample of groundwater was collected from the Circle S Ranch Well 4 on May 18, 2007, and a prior sample for Well 4 was collected on September 27, 2006. Key test results for these two samples are shown in **Table 4.6-1**. In comparison, the groundwater quality of the two samples from Well 4 has remained stable over time. Moreover, the groundwater character, low boron, relatively high silica, and detected concentrations of iron and manganese are all characteristic of groundwater from other wells in the region that are constructed into the volcanic rocks of the Sonoma Volcanics geology. Therefore, the groundwater quality is wholly acceptable for vineyard irrigation purposes. Treatment for iron and/or manganese may be needed if the groundwater is ever to be used for domestic supply.

Test results of samples collected from Circle S Ranch Wells 1, 2 and 3 on May 16, June 15 and August 30, 2006 were compared with the two samples for Well 4. The comparison shows that for all of the samples from the Circle S Ranch wells, total dissolved solids concentrations ranged from 140 to 200 milligrams per liter (mg/L) and total hardness values were between 41 and 63 mg/L. The main ion was bicarbonate, while cation concentrations in milliequivalents per liter varied slightly from well to well and over the sampling period. The highest fluoride concentrations detected were 0.14 mg/L in Well 4 on September 27, 2006. Iron concentrations ranged from undetectable levels to 1.4 mg/L, whereas manganese ranged from 0.021 to 0.26 mg/L. This comparison also reveals groundwater quality from the samples similar to those expected from wells drilled in volcanic rocks of the Sonoma Volcanics.

According to the SFRWQCB Basin Plan, groundwater with a beneficial use of agricultural supply shall not contain concentrations of chemical constituents in amounts that adversely affect such beneficial use. At a minimum, groundwater designated for use as agricultural supply shall not contain concentrations in excess of the limits shown in **Table 4.6-1**.

Comparison of the two groundwater samples from Circle S Ranch Well 4 with groundwater objects for agricultural supply indicates that the measured concentrations of all constituents of concern fall within acceptable levels.

**TABLE 4.6-1**  
GROUNDWATER SAMPLE CONCENTRATIONS

Constituent	Circle S Ranch Well 4		Agricultural Supply Limit <sup>2</sup>
	May 18, 2007 <sup>1</sup>	September 27, 2006 <sup>1</sup>	
Total dissolved solids (TDS)	180 mg/L	200 mg/L	-
Total hardness (TH)	48 mg/L	43 mg/L	-
Fluoride (F)	not detected	0.14 mg/L	15.0 mg/L
Nitrate (NO <sub>3</sub> )	not detected	not detected	-
Arsenic (As)	0.006 mg/L	0.0054 mg/L	2.0 mg/L
Boron (B)	0.03 mg/L	not detected	2.0 mg/L
Iron (Fe)	1.4 mg/L	0.19 mg/L	20.0 mg/L
Manganese (Mn)	0.26 mg/L	0.22 mg/L	10.0 mg/L
Adjusted sodium absorption ratio (adj. SAR)	0.59 units	0.80 units	9.0 units
Silica	99 mg/L	98 mg/L	-
Sodium	12 mg/L	12 mg/L	-
Chloride	5.0 mg/L	5.7 mg/L	355.0 mg/L

Source: <sup>1</sup>RCS, 2007

<sup>2</sup>SFRWQCB, 2007b

#### 4.6.1-4 WATER SUPPLY

Existing and proposed water supply for the Circle S Ranch is outlined in **Table 4.6-2**. Currently the property uses a total of 14.0 af per year, including 13.5 af of surface water to irrigate 27 acres of vineyard and 0.5 af of groundwater for residential supply. Under the proposed project, the property would use a total of 205.6 af per year. A total of 15.7 af of surface water would be used to irrigate 31.3 acres of vineyard (7.7 percent of proposed vineyard acreage), the remaining 373.7 acres (92.3 percent of proposed vineyard acreage) would be irrigated using 186.9 af of groundwater, and up to an additional 3.0 af of groundwater would supply water for six existing residential units.

#### Surface Water Supply

Water for the project site is currently provided by surface water from an existing onsite reservoir with a capacity ranging from 118.6 to 130.0 af, which is operated under State Water Right Licenses 11041 (Application 22999) and 11507 (Application 24836). Copies of these applications can be found on file with the State Water Resources Control Board, Division of Water Rights and **Appendix B**. These licenses allow for the diversion and storage of 48 af (License 11041) and 83 af (License 11507) with a combined maximum withdrawal of 116 af per annum for irrigation of 79.5 net acres, (as amended on March 5,

2002) as shown in **Table 4.6-3** and **Figure 4.6-2**. Vineyard authorized for irrigation by surface water pursuant to Water Right Licenses 11041 and 110507, includes existing vineyard Blocks 6B and 9, and proposed vineyard Block 8. As discussed, irrigation of these areas currently uses 13.5 af per year, and under the proposed project would use 15.7 af per year. Water is also allowed to be used for the purposes of irrigation, fire protection, stockwatering and recreation at the reservoir. No modifications to the existing water rights are proposed.

**TABLE 4.6-2**  
CIRCLE S RANCH WATER SUPPLY

Water Usage	Development	Water Source	Rate (af)	Quantity (af per year)
<b>Existing</b>				
Vineyard	27 acres	Surface Water	0.5 per unit <sup>1</sup>	13.5
Residential	1 unit	Groundwater	0.5 per unit <sup>1</sup>	0.5
<i>Total</i>	-	-	-	14.0
<b>Proposed Project</b>				
Vineyard	31.3 acres	Surface Water	0.5 per acre <sup>2</sup>	15.7
Vineyard	373.7 acres	Groundwater	0.5 per acre <sup>2</sup>	186.9
Residential	6 units	Groundwater	0.5 per unit	3.0
<i>Total</i>	-	-	-	205.6

<sup>1</sup> Single-family residence, based on Attachment D (County Phase I Water Availability Analysis) of #P06-01508-ECPA

<sup>2</sup> Maximum potential rate (Appendix J and communication with Tom Adams, PPV, 9-08)

**TABLE 4.6-3**  
WATER RIGHT LICENSES 11041 AND 11507 PLACE OF USE

Use Within	Section	Township	Range	B & M	Acres
SW ¼ of SE ¼	26	7N	4W	MD	8.0
SE ¼ of SE ¼	26	7N	4W	MD	8.1
NW ¼ of NE ¼	35	7N	4W	MD	1.6
NE ¼ of NE ¼	35	7N	4W	MD	15.5
SW ¼ of SW ¼	25	7N	4W	MD	1.5
NW ¼ of NW ¼	36	7N	4W	MD	36.1
NE ¼ of NW ¼	36	7N	4W	MD	5.0
SW ¼ of NW ¼	36	7N	4W	MD	2.8
SE ¼ of NW ¼	36	7N	4W	MD	0.9
<b>Total:</b>					<b>79.5</b>

Note: The proposed project would irrigate 31.3 acres of vineyard within the authorized 79.5-acre place of use (POU).

Source: State Water Resource Control Board, 2007.

### Groundwater Supply

It is anticipated that the 373.7 acres of proposed vineyard not shown in the POU for Licenses 11041 and 11507 would be irrigated using groundwater. A total of eight groundwater wells would be used under the proposed project. Four groundwater wells (1 -

4) were constructed on the Circle S Ranch in 2006 (**Figure 4.6-2**), and an additional four groundwater wells (no assigned numbers) would be constructed with the proposed project. Currently, only Well 1 can be actively pumped. Wells 2, 3, and 4 have yet to be equipped with permanent pumps. The wells were drilled to depths ranging from 600 to 820 feet and were cased with PVC casing to depths ranging from 581 to 810 feet. Wells 1 and 2 have ten-inch diameter casings, and Wells 3 and 4 have eight-inch diameter casings. The boreholes for all onsite wells were drilled within Sonoma Volcanics bedrock (**Figure 4.6-2**). All of the wells have sanitary seals that allow them to be used for both irrigation-supply and domestic-supply purposes. It is anticipated that the four proposed groundwater wells would be constructed in a manner similar to the four existing groundwater wells.

Onsite Well 1 is located near the existing cluster of structures in the middle of the project site. The other onsite wells, including the proposed wells, are located away from the onsite drainages, except for Well 1 which is located near a tributary to Milliken Creek in the center of the project site. As discussed, alluvium on the project site is shallow and not laterally extensive. None of the onsite wells are considered capable of directly pumping surface water runoff because the minimum cement seal depth in these four wells is 55 feet and the shallowest perforation interval begins at a depth of 90 feet. Further, each well is located at a distance of more than 1,000 feet from the main drainage feature of the area, Milliken Creek. **Figure 4.6-2** also shows the location of four offsite wells located within proximity of the project site and within the same coverage of Sonoma Volcanics bedrock. Well 2 is located approximately 4,000 feet east from the nearest offsite well, which is located just east of Atlas Peak Road. The nearest proposed well is located approximately 2,100 feet from the nearest offsite well.

## 4.6.2 REGULATORY FRAMEWORK

### 4.6.2-1 FEDERAL

The Federal CWA is the primary federal law that protects the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. It operates on the principle that all pollutant discharges into the nation's waters are unlawful unless specifically authorized by a permit. The CWA authorizes the U.S. Environmental Protection Agency (USEPA) to protect and maintain the quality and integrity of the nation's waters. Part of the CWA provides for the National Permit for Discharge Elimination System (NPDES), in which discharges into navigational waters are prohibited except in compliance with specified requirements and authorizations.

#### 4.6.2-2 STATE

The Regional Water Quality Control Plan for the San Francisco Bay Basin and the California Enclosed Bays and Estuaries Plan serve to protect the water quality of the state consistent with identified beneficial uses. These plans govern the waste discharge and non-point source control requirements in the state through the regional boards.

Section 303 (d) of the CWA requires that each state identify water bodies or segments of water bodies that are “impaired” (i.e., not meeting one or more of the water quality standards established by the state). Once a water body or segment is listed, the state is required to establish a TMDL for the pollutant causing the conditions of impairment. The TMDL is the quantity of a pollutant that can be safely assimilated by a water body without violating water quality standards. The intent of the 303 (d) list is to identify the water body as requiring future development of a TMDL to maintain water quality and reduce the potential for continued water quality degradation. The SFRWQCB has identified waters that are polluted and need further attention to support their beneficial uses. The 303 (d) list includes Napa River for nutrients, pathogens, and sedimentation/siltation.

The SFRWQCB identifies beneficial uses and water quality objectives for surface waters in the region, as well as effluent limitations and discharge prohibitions intended to protect those uses. The existing beneficial uses designated for the Napa River are agricultural, municipal, and domestic supply, cold freshwater habitat, fish migration, navigation, preservation of rare and endangered species, water contact and non-water contact recreation, fish spawning, warm freshwater habitat, and wildlife habitat (SFRWQCB, 1995). Milliken Reservoir has existing beneficial uses of cold freshwater habitat, municipal, and domestic supply, fish spawning, warm freshwater habitat, and wildlife habitat, and limited beneficial use of water contact recreation (SFRWQCB, 1995).

#### **National Pollutant Discharge Elimination System General Permit**

In California, the Environmental Protection Agency has delegated the implementation of this program to the State Water Resources Control Board (State Water Board) and Regional Water Quality Control Boards. The NPDES program regulates municipal and industrial storm water discharges under the requirements of the CWA. Initially, the NPDES program permits focused on regulating point source pollution. In the early 1970s an amendment to the CWA directed the NPDES program to address non-point source pollution through a phased approach.

The NPDES is federally mandated, but enforced locally. Applicants with construction projects disturbing one or more acres of soil are required to file for coverage under the State Water Board, Order No. 99-08-DWQ, NPDES General Permit No. CAS000002 for

Discharges of Storm Water Runoff Associated with Construction Activity (General Permit). Construction activities includes clearing, excavation, stockpiling, and reconstruction of existing facilities involving removal and replacement. With regards to installation, #P06-01508-ECPA would cover the requirements under the General Permit.

#### 4.6.2-3 LOCAL

The Napa County General Plan (General Plan; 2008) serves as a broad framework for planning within Napa County. State law requires general plan's to cover a variety of topics. The General Plan contains goals and policies related to open space conservation, natural resources, water resources, safety, and circulation, that provide guidance for issues related to hydrology and water quality from the proposed project.

##### Open Space Conservation Policies

Policy CON-6: The County shall impose conditions on discretionary projects which limit development in environmentally sensitive areas such as those adjacent to rivers or streamside areas and physically hazardous areas such as floodplains, steep slopes, high fire risk areas and geologically hazardous areas.

##### Water Resources Goals and Policies

Goal CON-8: Reduce or eliminate groundwater and surface water contamination from known sources (e.g., underground tanks, chemical spills, landfills, livestock grazing, and other dispersed sources such as septic systems).

Goal CON-9: Control urban and rural storm water runoff and related non-point source pollutants, reducing to acceptable levels pollutant discharges from land-based activities throughout the county.

Goal CON-10: Conserve, enhance and manage water resources on a sustainable basis to attempt to ensure that sufficient amounts of water will be available for the uses allowed by this General Plan, for the natural environment, and for future generations.

Goal CON-11: Prioritize the use of available groundwater for agricultural and rural residential uses rather than for urbanized areas and ensure that land use decisions recognize the long term availability and value of water resources in Napa County.

Goal CON-12: Proactively collect information about the status of the county's surface and groundwater resources to provide for improved forecasting of future supplies and effective management of the resources in each of the County's watersheds.



Policy CON-42: The County shall work to improve and maintain the vitality and health of its watersheds. Specifically, the County shall:

- d) Support environmentally sustainable agricultural techniques and best management practices (BMPs) that protect surface water and groundwater quality and quantity (e.g., cover crop management, integrated pest management, informed surface water withdrawals and groundwater use).

Policy CON-45: Protect the County's domestic supply drainages through vegetation preservation and protective buffers to ensure clean and reliable drinking water consistent with state regulations and guidelines. Continue implementation of current Conservation Regulations relevant to these areas, such as vegetation retention requirements, consultation with water purveyors/system owners, implementation of erosion controls to minimize water pollution, and prohibition of detrimental recreational uses.

Policy CON-47: The County shall comply with applicable Water Quality Control/Basin Plans as amended through the Total Maximum Daily Load (TMDL) process to improve water quality. In its efforts to comply, the following may be undertaken:

- e) Ensuring continued effectiveness of the National Pollution Discharge Elimination System (NPDES) program and storm water pollution prevention.
- f) Ensuring continued effectiveness of the County's Conservation Regulations related to vineyard projects and other earth-disturbing activities.

Policy CON-48: Proposed developments shall implement project-specific sediment and erosion control measures (e.g., erosion control plans and/or stormwater pollution prevention plans) that maintain pre-development sediment erosion conditions or at minimum comply with state water quality pollution control (i.e., Basin Plan) requirements and are protective of the County's sensitive domestic supply watersheds. Technical reports and/or erosion control plans that recommend site-specific erosion control measures shall meet the requirements of the County Code and provide detailed information regarding site specific geologic, soil, and hydrologic conditions and how the proposed measure will function.

Policy CON-50: The County will take appropriate steps to protect surface water quality and quantity, including the following:

- a) Preserve riparian areas through adequate buffering and pursue retention, maintenance, and enhancement of existing native vegetation along all intermittent and perennial streams through existing stream setbacks in the County's Conservation Regulations
- c) The County shall require discretionary projects to meet performance standards designed to ensure peak runoff in 2-, 10-, 50-, and 100-year events following

development is not greater than predevelopment conditions.

e) In conformance with National Pollution Discharge Elimination System (NPDES) requirements, prohibit grading and excavation unless it can be demonstrated that such activities will not result in significant soil erosion, silting of lower slopes or waterways, slide damage, flooding problems, or damage to wildlife and fishery habitats

Policy CON-52: Groundwater is a valuable resource in Napa County. The County encourages responsible use and conservation of groundwater and regulates groundwater resources by way of its groundwater ordinances.

Policy CON-53: The County shall ensure that the intensity and timing of new development are consistent with the capacity of water supplies and protect groundwater and other water supplies by requiring all applicants for discretionary projects to demonstrate the availability of an adequate water supply prior to approval. Depending on the site location and the specific circumstances, adequate demonstration of availability may include evidence or calculation of groundwater availability via an appropriate hydrogeologic analysis or may be satisfied by compliance with County Code “fair-share” provisions or applicable State law. In some areas, evidence may be provided through coordination with applicable municipalities and public and private water purveyors to verify water supply sufficiency.

#### Safety Goals and Policies

Goal SAF-5: To protect residents and businesses from hazards caused by human activities.

Policy SAF-30: Potential hazards resulting from the release of liquids (wine, water, petroleum products, etc.) from the possible rupture or collapse of aboveground tanks should be considered as part of the review and permitting of these projects.

#### Circulation Goals and Policies

Policy CIR-8: Roadway, culvert, and bridge improvements and repairs shall be designed and constructed to minimize fine-sediment and other pollutant delivery to waterways, to minimize increases in peak flows and flooding on adjacent properties, and where applicable to allow for fish passage and migration, consistent with all applicable codes and regulations.

#### **Napa County Code (Chapter 18.108 – Conservation Regulations)**

Napa County Code 18.108 includes conservation regulations such as requirements for standard erosion control measures, provisions for intermittent or perennial streams, requirements for use of erosion hazard areas. This section of the code also defines streams and provides stream setbacks for grading and land clearing for agricultural development (see **Chapter 4.2 Biological Resources** for the discussion of this code section).

Some portions of the project site have slopes greater than five percent, therefore, under Napa County Code Section 18.108.070, the proposed project would require permit approval prior to any grading activities (see **Chapter 3.0 Project Description**).

### **Napa County Code (Chapter 18.108.027 – Sensitive Domestic Water Supply Drainages)**

Napa County Code 18.108.027 includes regulations such as requirements for vegetation retention (“60/40” rule) longer winter shut-down periods, geotechnical analysis and the design of drainage facilities to 100-year storm events.

### **Napa County Resource Conservation District (RCD)**

The RCD published the Napa River Watershed Owner’s Manual in 1996. This manual lists the following objectives and recommendations that pertain to the proposed project:

#### Objective G: Reduce Soil Erosion

Recommendation G2: Reduce erosion resulting from agricultural activities.

Agricultural activities in the Napa River watershed include grazing, viticulture, small farms and horticulture. Soil disturbance or vegetation removal as a result of agricultural activities can result in loss of topsoil and subsequent water quality degradation. Good agricultural management can also benefit water quality and wildlife habitat, and can contribute to the overall good health of the watershed. Sub-recommendations include:

- G2.1. Emphasize erosion prevention over sediment retention as a priority in agricultural planning and operations.
- G2.2. Promote the use of permanent vegetative ground cover in vineyards. Support research, demonstrations and technology exchange to refine cover crop technology for vineyards and orchards.
- G2.3. Establish tree cover in unused areas to decrease erosion of topsoil.
- G2.4. Maintain access roads and farm roads to control storm water runoff in agricultural areas. Utilize assistance from the USDA Natural Resource Conservation Service, or other erosion control professionals, for design of storm water runoff control on rural roads.
- G2.5. Minimize wet weather vehicle traffic through or across agricultural areas, especially on hillsides.
- G2.6. Provide adequate energy dissipaters for culverts and other drainage pipe outlets.
- G2.7. Establish vegetated buffer strips along waterways.

G2.8. Develop grazing management plans to increase vegetation residue on rangeland.

### 4.6.3 IMPACTS AND MITIGATION MEASURES

#### 4.6.3-1 EROSION CONTROL PLAN FEATURES AND SURFACE RUNOFF

The basic philosophy for the design of the proposed project is to minimize environmental disturbance and control erosion on the project site rather than capturing soil after it has been displaced. To help meet this goal the proposed project would not involve pipelines or other artificial measures for the control of runoff, and erosion would be minimized through sustainable farming practices including cover crops and filter strips, as well as avoidance of erosion-prone areas. Pipelines would be required to transport water supplies from the onsite reservoir and groundwater wells to proposed vineyard areas (**Figure 4.6-2**). These pipelines shall generally be located within roadways, vineyards and vineyard avenues. Where they are not located within these areas, disturbed ground shall be seeded and mulched in accordance with #P06-01508-ECPA. #P06-01508-ECPA includes several different measures for the control of erosion, including measures for rocked crossings within existing and proposed roads, repair of existing erosional features on roads and drainages, vegetative cover in proposed vineyard blocks, removal of livestock grazing from the project site, and a stream restoration plan to enhance riparian areas that have been severely degraded due to years of grazing by livestock. The proposed project would include features that preserve the existing course of runoff and drainage onsite, as well as features that modify the course of runoff and drainage onsite. A total of 12 culverts would be installed at five locations on roads throughout the project site, as shown in **Figure 3-10** and discussed in **Chapter 3.0**. A site visit was conducted (**Appendix M**) to investigate the appropriateness of proposed culverts and any potential effects to runoff and drainage at these areas. All of the proposed culverts are suitable to maintaining the drainage channel and existing vegetation. However, culverts at two locations (#1 and #5 on **Figure 3-10**) are located along existing rocked walls, and based on findings in the cultural resources survey, all existing rocked walls on the projects site will need to be preserved.

A total of 25 existing rocked crossings are located where drainages cross roads throughout the project site (**Figure 3-10**). Rocked crossings allow for vehicles to cross drainages over rocks, which helps preserve the natural channel bed by limiting the degradation of this area by vehicles and the amount of sediment transported by the channel, while allowing water to pass through the rocks and continue downstream. Eight existing rocked crossings would be abandoned with the proposed project. Specifically, the roads where these rocked crossings are located would not be used for the proposed project, and the rocked crossings would be left in their current conditions. The remaining existing rocked crossings would continue to

be used on roads with the proposed project. Several of these rocked crossings were observed during the site visit, all of which were determined to be appropriate for conditions. Proposed culvert #1 (**Figure 3-10**) was reviewed in a site visit and determined that this culvert and related access road to proposed Block 10b are unnecessary given an access road to Block 10b currently exists. This culvert and related access road will be deleted from the proposed project by way of condition of approval. In addition, a small stretch of existing road (and existing related rock crossing) proposed for seasonal use, which provides access to the reservoir will be required to be abandoned and restored.

Other components included in #P06-01508-ECPA would help repair existing erosion features. An existing diversion ditch would be repaired. Construction of approximately 136 rolling dips would occur on existing roads to decrease the erosion potential of roads. A filter strip would be constructed at the south edge of proposed Block 13 to increase vegetation cover and decrease runoff. Construction of stone weirs would occur at several locations along onsite drainages to reduce erosion. Existing erosional features, including eroding cut slopes and gullies would be repaired to reduce erosion. Additionally, temporary erosion control measures such as straw wattles and waterbars would be installed as needed to help decrease surface erosion and promote high infiltration rates and settling of soil sediment particulates. These measures would serve to decrease the velocity of overland flow by increasing surface roughness and adding breaks in slope.

Vegetative erosion control measures would consist of a permanent no-till cover crop strategy. Disturbed areas would be seeded and mulched with a mix of seeds and vineyard management personnel would apply fertilizer via injection into the drip irrigation system (**Table 4.5-2**), as necessary prior to September 15 of the year of construction. A permanent cover crop would be managed each year such that any areas that have less than 75 percent vegetative cover would be re-seeded and mulched until adequate coverage is achieved. The cover crop for proposed Blocks 11, 12A, 12B, 12C and 15 would be managed each year for vegetation cover of 80 percent. These blocks were identified as requiring a slightly greater vegetation cover to control erosion, based on the results of the Universal Soil Loss Equation calculations (**Appendix B**). Maintenance of a vegetative cover crop would provide surface roughness to help prevent the concentration of runoff, collect moisture, and help prevent the loosening of soil that would be susceptible to erosion.

Riparian restoration is proposed for implemented throughout the project site, as discussed in **Chapter 3.0** and shown on **Figure 3-11**. It should be noted that stream restoration measures would be considered with some flexibility because the streams are constantly in flux. The removal of existing rocked crossings, as described above, would contribute towards stream restoration. In addition, stone weirs would be constructed in several locations across Milliken Creek and its tributaries, and weak portions of existing stream banks would be repaired and supported, including at the spillway of the existing onsite

reservoir. The abandonment of rocked crossings, new stone weirs, and repairing stream banks and the spillway would reduce sources of sediment to the drainages and erosional features. If possible, restoration activities should be carried out when the drainages are dry, so that no debris or sediment is washed into the waterways. If not, Best Management Practices to prevent debris and sediment entering waterways shall be implemented during restoration activities.

Development of the 458.7 gross acres proposed would result in removal of approximately 289 acres of oak woodlands and approximately 201 acres of other cover types, which include grassland and non-oak woodlands. The total removal of 458.7 acres of existing cover represents approximately 29 percent of the project site cover. Approximately 520 acres have been identified as tree management areas (**Figure 3-12**). Tree management would include planting trees, thinning existing trees for better health and regeneration, and compliance with applicable local regulations. The replanting of trees onsite would increase vegetation cover and surface roughness in these areas, which would help prevent the concentration of runoff in these areas.

With the application as proposed, livestock grazing was to be removed from the project site. However, the discussion of biological issues in **Chapter 4.2** determined that managed livestock grazing onsite may provide for the enhancement of degraded habitats. Selected livestock grazing may occur within protected areas and replanted areas for weed management and fire prevention pursuant to **Mitigation Measure 4.2-1**. When livestock are grazed outside of vineyard areas, temporary fencing would be utilized to prevent livestock access to Milliken Creek and its tributaries. Limiting livestock grazing activities would allow for denser vegetation growth compared to existing conditions, which would result in increased surface roughness to help prevent the concentration of runoff, collect moisture, and help prevent the loosening of soil that would be susceptible to erosion. Preventing livestock from accessing Milliken Creek and its tributaries would reduce physical disturbance and nutrient inputs in these areas, providing for healthier stream corridors.

Stream setbacks would also be incorporated into the project design. As discussed in **Chapter 4.2**, Napa County designated streams incorporate minimum 35 to 50-foot setbacks, measured from the top of the bank, Napa County non-designated streams incorporate minimum 20-foot setbacks and wetlands incorporate 50-foot setbacks (as seen in **Figure 4.2-8** minimum 50-foot setbacks are maintained from Napa County designated streams). The minimum setback distances are used to provide corridors for wildlife movement, but would also ensure that vegetation is preserved adjacent to drainages. In addition, **Mitigation Measure 4.2-13** includes the protection of minimum 100 foot buffers from identified water habitats surrounded by open grassland and agricultural areas onsite to protect prime Western pond turtle nesting habitat and 275 foot buffers along water features

that are surrounded by oak woodland to provide ample protection of Western pond turtle overwintering habitats.

The Natural Resources Conservation Service (USDA, 2000) and the University of California, Division of Agricultural and Natural Resources (2006) recommend 50-foot wide vegetated buffers for stream and wetland protection because under most conditions it is a generally adequate buffer width to provide enough vegetation to entrap sediments and soils, and filter chemicals adequately by facilitating degradation within buffer soils and vegetation. Additionally, the U.S. Environmental Protection Agency has indicated that buffer strips of three to 50 feet wide were effective in removing nitrogen, and grassland buffer strips of approximately 50 feet effectively removed approximately 50 percent of nitrogen in runoff (USEPA, 2005).

#### 4.6.3-2 SIGNIFICANCE CRITERIA

For the purpose of this Environmental Impact Report, an impact to hydrology and water quality would be significant if it would result in any one of the following:

- Alter the existing onsite drainage pattern in a manner that would substantially increase the volume and rate of surface runoff such that on- or offsite drainages become unstable (either by increased erosion or increased sediment deposition), the capacity of existing or planned stormwater drainage systems is overwhelmed, and/or significant flooding occurs;
- Alter the existing onsite drainage pattern in a manner that would substantially degrade water quality, onsite and within downstream receiving water bodies, by increasing the suspended sediment load and/or contributing other pollutants to the natural waterways;
- Expose people or structures to a significant risk of loss due to flooding; or
- Substantially deplete groundwater supplies, or interfere substantially with groundwater recharge, such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table.

#### 4.6.3-3 IMPACTS AND MITIGATION MEASURES

**Impact 4.6-1:** Development of the proposed project would alter the existing drainage pattern of the project site; however, a slight decrease in the volume and rate of runoff onsite would occur and a less-than-significant impact on receiving waters would result.

The drainage pattern of an area will, in part, determine the rate and volume of runoff. Pattern refers to the characteristics of a landscape that determine the course of runoff in that

area, which is determined by the size and extent of vegetation, and topographic and geologic features. Development activities involved with the proposed project would alter the existing drainage pattern of the project site. Lands that usually generate greater concentrations of runoff characteristically contain few obstacles, impervious surfaces and poorly drained soils. The conversion of land uses on the project site to an operational vineyard would result in the removal of 458.7 acres of existing cover represents approximately 31 percent of the project site cover. Conversion of land uses would also involve soil ripping to a depth of three feet, and earthmoving activities required for vineyard preparation. Three storage tanks (up to 10,000 gallon capacities) would be constructed within proposed vineyard block areas (**Figure 4.6-2**). The tanks would provide new obstacles to runoff but are not considered to be large enough to substantially alter the pattern of runoff onsite. New roads would provide new areas for runoff to concentrate. The abandonment of existing roads would result in these roads being left un-used in their current state, and runoff characteristics would not change in these areas. Installation of the proposed culverts would preserve the channel beds and natural pathways of drainage in these areas. Installation of the two new rocked crossings would place rocks in the drainage channels, which would slightly obstruct the existing pathway of water in the drainages, but flows would still be able to pass through the features and continue downstream. The grazing plan, stream setbacks, and vegetative erosion control measures would increase ground vegetation cover, providing new obstacles to the concentration of runoff.

Alteration of the existing drainage pattern resulting in an increased volume and rate of runoff to onsite drainages could result in impacts to hydrologic Milliken Creek and its tributaries, as well as Milliken Reservoir. An increased volume and rate of runoff could increase/cause bank erosion in unstable channels and increased sediment transport and loading to receiving waters as well as exceed the capacity of existing stream channels resulting in water channels spilling over and flooding of adjacent lands.

### **Hydrology Analysis Methodology**

To evaluate the effects of the proposed project on runoff, a quantitative watershed hydrology study was completed (**Appendix I**). The study quantifies the volume and rate of surface runoff at the project site based on existing land uses and post-development land uses of the proposed project, as well as evaluates the capacity and stability of onsite channels from the change in runoff under proposed project conditions.

First, the runoff potential of different land uses was determined. This was done by assigning land use curve numbers to different land uses. Land use curve numbers indicate the runoff potential of a soil and are based on ground cover and the hydrologic soil group. A curve number is attributed to different land uses to measure the influence of land cover on infiltration and runoff rates. Curve numbers depend on the vegetative or impervious cover



and land use practice. The higher the curve number, the higher the potential for runoff. Soils are classified into four groups (A, B, C, and D) according to the infiltration rate for rainfall, and are classified ranging from high infiltration rate and low runoff potential (Soil Group A) to very slow infiltration rate and a high runoff potential (Soil Group D).

Input data for the analysis was separated into watersheds, reaches, and junctions. The runoff area for onsite drainages was delineated into eight watersheds (**Figure 4.6-1**). Watersheds 1 through 4 encompass areas draining directly to Milliken Creek. Watersheds 5 through 7 encompass smaller areas draining to Watersheds 1 through 4. Watershed 8 drains an isolated area along the eastern boundary of the project site. In the analysis, the onsite watersheds account for the factors of land use curve numbers, initial loss and lag time. Initial loss accounts for water not available for runoff from factors other than land use, such as evaporation. Lag time accounts for the time it takes to route flows through the watersheds. Reaches represent areas of drainage from one watershed to the next, and account for the factor of additional lag time. Junctions represent areas where water outlets from one watershed and flows into another.

For each onsite watershed, the United States Army Corps of Engineers HEC-HMS model was used to estimate runoff volumes and peak discharges. HEC-HMS simulates the precipitation-runoff process in watersheds. In each watershed representative channels and routing channels were measured for use in determining the time of concentration. The time of concentration is used to determine how long runoff takes to travel from the farthest location in a watershed to its outlet point. In this analysis the time of concentration was calculated using the NRCS TR 55 program. The program calculates the time for sheet flow runoff, shallow concentrated flows, and open channel flows. No baseflows (flow from groundwater) were assumed to occur because this model is attempting to capture changes in flow due to changes in surface runoff characteristics. The model was run for precipitation from 2-, 5-, 10-, 25-, 50-, and 100-year intensity precipitation events. Precipitation data was obtained from the National Oceanic and Atmospheric Administration Precipitation-Frequency Atlas of the Western United States.

It should be noted that the land use curve numbers for the hydrology study assume that no livestock grazing would occur under the proposed project. However, as discussed above, limited livestock grazing would occur with the implementation of mitigation measures contained in **Chapter 4.2**. Since livestock grazing would be limited and the density of vegetation cover is expected to increase, the land use curve numbers used in the hydrology study are still appropriate for modeling runoff conditions after implementation of the proposed project. In addition, a few of the vegetation alliances mapped in the hydrology study were subsequently modified to those shown in **Figure 4.2-1** and discussed in **Chapter 4.2**. However, these changes consisted of slight boundary adjustments or

designation of an area to a similar vegetation type, and the results of the hydrology study are not anticipated to differ.

## Results

Data was generated for each of the eight onsite watersheds and the Milliken Creek outlet, located just after Milliken Creek flows off the southeast corner of the project site (**Figure 4.6-1**). The hydrology of each watershed is representative of the size and land uses of that particular watershed. Therefore, collectively these results provide a perspective on surface runoff throughout the project site.

**Table 4.6-4** shows that the overall peak discharge at the Milliken Creek outlet from a 100-year precipitation event decreases by about 670 cubic feet per second (cfs) or 14.9 percent after development of the proposed project. The change in peak discharges throughout the project site from a 100-year precipitation event is similar, ranging from a 4.7 percent decrease in Watershed 2 to a 31.5 percent decrease in Watershed 3. **Table 4.6-4** shows that a decrease in runoff also results throughout the project site from the more frequently occurring precipitation events. For the Milliken Creek outlet and each watershed, development of the proposed project decreases peak discharge to a greater extent with more frequently occurring precipitation events. While development of the proposed project would result in an overall net decrease in the peak discharge runoff for each of the modeled watersheds, it is possible that there are some areas within the watersheds where localized increases would occur.

Decrease in peak discharge runoff is attributed to increases in surface roughness from an increase in vegetation cover, and corresponding increase in infiltration of runoff. Increased surface roughness would occur from the removal (management) of livestock grazing at the project site, especially in the area of Watershed 6. The main drainage feature in Watershed 6 conveys water from the onsite reservoir and through the onsite stockpond, just before reaching Milliken Creek. This area is currently surrounded by valley oak riparian forest, which has been damaged from intense livestock grazing. The removal (management) of grazing in this area would allow the riparian forest to recover to a more natural state resulting in an increase in channel vegetation and roughness. This will increase water concentration time, which will delay peak flows and slightly reduce the peak discharge.

**TABLE 4.6-4**  
CIRCLE S RANCH PROPERTY RUNOFF PEAK FLOWS

Location	Precipitation Event Frequency					
	2-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr
<b>Watershed 7</b>	<i>Peak Flow Discharge</i>					
Existing Conditions (cfs)	66.17	114.19	140.49	256.52	319.22	383.98
Proposed Project (cfs)	55.28	96.80	119.86	223.92	281.38	341.43
% Decrease	16.5%	15.2%	14.7%	12.7%	11.9%	11.1%
<b>Watershed 6</b>						
Existing Conditions (cfs)	94.45	136.84	158.88	250.62	297.72	345.22
Proposed Project (cfs)	66.37	98.23	115.14	187.13	224.91	263.41
% Decrease	29.7%	28.2%	27.5%	25.3%	24.5%	23.7%
<b>Watershed 5</b>						
Existing Conditions (cfs)	92.60	131.9	152.29	236.42	279.32	322.47
Proposed Project (cfs)	79.49	115.38	134.21	213.43	254.57	296.28
% Decrease	14.2%	12.5%	11.9%	9.7%	8.9%	8.1%
<b>Watershed 4</b>						
Existing Conditions (cfs)	451.44	664.88	777.09	1,248.00	1,492.00	1,739.4
Proposed Project (cfs)	412.60	612.58	718.48	1,167.00	1401.60	1,640.2
% Decrease	8.6%	7.9%	7.5%	6.5%	6.1%	5.7%
<b>Watershed 3</b>						
Existing Conditions (cfs)	122.97	206.77	252.27	450.95	557.32	666.65
Proposed Project (cfs)	79.78	135.54	166.35	303.67	378.55	456.44
% Decrease	35.1%	34.4%	34.1%	32.7%	32.1%	31.5%
<b>Watershed 2</b>						
Existing Conditions (cfs)	54.73	112.42	145.60	299.37	386.01	477.46
Proposed Project (cfs)	52.23	107.03	138.64	285.25	367.93	455.2
% Decrease	4.6%	18.8%	4.8%	4.7%	4.7%	4.7%
<b>Watershed 1</b>						
Existing Conditions (cfs)	38.60	62.32	75.24	131.91	162.44	193.95
Proposed Project (cfs)	34.19	55.69	67.49	119.97	148.61	178.39
% Decrease	11.4%	10.6%	10.3%	9.1%	8.5%	8.0%
<b>Watershed 8</b>						
Existing Conditions (cfs)	110.60	166.29	195.65	319.75	384.31	449.9
Proposed Project (cfs)	86.43	131.94	156.29	261.12	316.66	373.54
% Decrease	21.9%	20.7%	20.1%	18.3%	17.6%	17.0%
<b>Milliken Creek Outlet</b>						
Existing Conditions (cfs)	1,005.60	1,560.0	1,856.00	3,128.30	3,800.10	4,488.4
Proposed Project (cfs)	816.37	1,282.30	1,534.20	2,629.50	3,215.30	3,818.6
% Decrease	18.8%	17.8%	17.3%	15.9%	15.4%	14.9%

Source: Ayers Associates, 2006

Note: Watersheds 1 to 7 are organized according to the approximate path of drainage on the project site (Figure 4.6-1), such as Watershed 7 drains an area upstream of Watershed 6. Watershed 8 drains an isolated area to the North of the outlet.

**Table 4.6-5** shows that the volume of runoff at the Milliken Creek outlet from a 100-year precipitation event decreases by about 82 af, or 4.9 percent after the development of the proposed project. The change in the volume of runoff throughout the project site from a 100-year precipitation event is similar, ranging from a 0.3 percent decrease in Watershed 2 to an 8.1 percent decrease in Watershed 7. **Table 4.6-5** also shows that the proposed project results in a decrease in the volume of runoff throughout the project site from each of the six precipitation scenarios. For the Milliken Creek outlet and each watershed, development of the proposed project decreases the volume of runoff to a greater extent with more frequently occurring precipitation events, except in Watershed 2 where the decrease in the volume of runoff volume remains at the same rate for 25- to 100-year precipitation events. Watershed 2 drains areas south of the project site, except for half of proposed Block 20 and a small portion of proposed Block 26.

A decrease in the volume of runoff throughout the project site would correspond to an increase in infiltration of runoff water. It is expected that most of the increased infiltration would be returned to the streams a short time following a precipitation event because bedrock is located close to the soil surface over large areas of the project site. It is also expected that some runoff water would percolate to groundwater. This would occur because of the fractured nature of the Sonoma Volcanics bedrock. The cycling of infiltrated water back to streams indicates that estimates provided in **Table 4.6-5** may overstate the reduction in the volume of runoff.

### **Channel Instability and Downstream Flooding**

The high channel transport capacity, confined channel geometry, and presence of resilient and shallow bedrock at watercourses within the upland portion of the project site all amount to a low potential for channel instability or flooding from increases in runoff. A field assessment of the project site following a high flow precipitation event revealed that none of the channels showed signs of stability issues. However, the alluvial fan and valley fill areas are naturally subject to channel incision and/or gulying due to the fine grained nature of alluvium (**Figure 4.4-3**).

**TABLE 4.6-5**  
CIRCLE S RANCH PROPERTY RUNOFF VOLUME

Location	Precipitation Event Frequency					
	2-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr
<b>Watershed 7</b>	<i>Runoff Volume</i>					
Existing Conditions (af)	35.93	53.51	62.91	103.46	125.03	147.21
Proposed Project (af)	31.39	47.37	56.01	93.80	114.16	135.25
% Decrease	12.6%	11.5%	11.0%	9.3%	8.7%	8.1%
<b>Watershed 6</b>						
Existing Conditions (af)	38.43	53.00	60.54	91.86	108.00	124.35
Proposed Project (af)	33.61	47.07	54.12	83.75	99.18	114.90
% Decrease	14.6%	11.2%	10.6%	8.8%	8.2%	7.6%
<b>Watershed 5</b>						
Existing Conditions (af)	32.83	44.99	51.27	77.26	90.62	104.13
Proposed Project (af)	29.74	41.25	47.24	72.29	85.27	98.46
% Decrease	9.4%	8.3%	7.9%	6.4%	5.9%	5.4%
<b>Watershed 4</b>						
Existing Conditions (af)	202.71	282.23	323.59	496.28	585.67	676.44
Proposed Project (af)	192.64	269.82	310.14	479.31	567.26	656.77
% Decrease	5.0%	4.4%	4.2%	3.4%	3.1%	2.9%
<b>Watershed 3</b>						
Existing Conditions (af)	64.67	95.27	111.55	181.28	218.14	255.96
Proposed Project (af)	56.85	84.82	99.85	165.03	199.87	235.82
% Decrease	12.1%	11.0%	10.5%	9.0%	8.4%	7.9%
<b>Watershed 2</b>						
Existing Conditions (af)	42.96	67.49	80.95	140.86	173.59	207.71
Proposed Project (af)	42.81	67.26	80.70	140.46	173.12	207.17
% Decrease	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
<b>Watershed 1</b>						
Existing Conditions (af)	19.78	28.88	33.74	54.57	65.61	76.96
Proposed Project (af)	18.25	26.87	31.49	51.48	62.17	73.18
% Decrease	7.7%	7.0%	6.7%	5.7%	5.2%	4.9%
<b>Watershed 8</b>						
Existing Conditions (af)	51.66	72.62	83.57	129.42	153.22	177.43
Proposed Project (af)	46.37	65.98	76.31	120.04	142.95	166.36
% Decrease	10.2%	9.1%	8.7%	7.2%	6.7%	6.2%
<b>Milliken Creek Outlet</b>						
Existing Conditions (af)	487.35	695.84	805.72	1,271.50	1,515.90	1,765.70
Proposed Project (af)	449.98	648.20	753.33	1,202.50	1,439.70	1,683.10
% Decrease	7.7%	6.8%	6.5%	5.4%	5.0%	4.7%

Source: Ayers Associates, 2006

Note: Watersheds 1 to 7 are organized according to the approximate path of drainage on the project site (Figure 4.6-1), such as Watershed 7 drains an area upstream of Watershed 6. Watershed 8 drains an isolated area to the North of the outlet.

The boundaries of the proposed vineyard blocks on hillside, alluvial fan, and valley floor areas are appropriate with regard to surface overland flow pathways. The proposed project would result in a low potential for sediment erosion and sediment yield impacts that could alter drainage channels (**Impact 4.4-1**). Increased vegetation in the main drainage feature for Watershed 6 would result from the removal (management) of livestock grazing (as discussed above). Based on results of the hydrology study, increased vegetation in the channel could roughly cut the capacity of the drainage channel in half (Ayers Associates, 2007). However, the increased vegetation would also result in more water being absorbed in the area. Some overbank flooding could occur in lower reaches, but these occurrences are expected to be minimal. The proposed project would not affect the capacity of the other onsite drainages.

### **Drainage System Capacity and Flooding**

The proposed project includes the construction of culverts at five locations and two new rocked crossings. These features would provide adequate pathways for runoff flows on the project site, as discussed in the review of erosion control plan features and surface runoff. Napa County Code 18.108.027 states that the development of onsite drainage facilities within Sensitive Domestic Water Supply Drainages, such as Milliken Reservoir, shall be sized and designed to handle the runoff from a 100-year precipitation event without failure of unintentional bypassing. Each of the culverts for the proposed projects was designed using the TR-55 program so that they have adequate capacity to manage peak flows from a 100-year precipitation event.

### **Maintenance and Monitoring Requirements**

For the oversight and operation of Erosion Control Plans (ECPs) in Sensitive Domestic Water Supply Drainages, Napa County Code 18.108.135 provides a provision for the maintenance and monitoring of ECPs, and Napa County Code 18.108.140 provides a provision for security, violations, and penalties related to ECPs.

According to Napa County Code 18.108.140, #P06-01508-ECPA would be required to implement a maintenance and monitoring program including the following components:

### Maintenance

- The property owner is responsible for insuring that erosion control measures installed operate properly and are effective in reducing erosion and related sedimentation to a minimum.
- The property owner shall either personally or have personnel inspect, repair, and clean as necessary the erosion control measures installed at least weekly during the period between October 1st and April 1st of each year.
- The property owner shall either be onsite him/herself or have personnel onsite as required when it is raining to inspect the erosion control measures present and take those actions necessary to keep them functioning properly.

### Monitoring

- The property owner shall implement, prior to the first winter rains after installation of the planned facilities is commenced, a permanent, on-going program of self-monitoring of ground cover condition, and erosion control facility operation.
- An Annual ECP Operation Status Report specifying ground cover condition and how the erosion control measures involved are operating shall be provided to the director by September 1st of each year.
- Where erosion control measures have failed, or are in imminent danger of failing, the property owner shall follow the following provisions:
  - Notify the director in writing of the failure or pending failure of any erosion control measures within 24-hours.
  - Install and modify temporary measures.
  - Submit within 96-hours after the discovery of a failure or pending failure an engineered plan for remedial measures necessary to permanently correct the problem, a plan for cleanup of damage done, and costs.
  - Insure that the revised plan prepared is fully implemented within 96-hours of its approval.
  - The plan preparer shall provide a notice to the County within 24-hours of full implementation of the plan prepared to permanently correct the problem.

### Inspection

Each project requiring an ECP that has not received a final inspection and been found complete by the director or his/her agent shall be inspected by the County or its agent after the first major precipitation event of each winter until the project has been completed and stable for three years. If it is found that the erosion control program implemented is not functioning properly or is ineffective, the property owner shall take

such remedial measures as the director deems necessary to reduce erosion and related sedimentation to minimal levels.

According to Napa County Code 18.108.140, the property owner would be required to file security:

1. In the amount of the estimated cost of original installation of the required erosion control measures. The security required shall not be released by the director until:
  - All required measures have been installed/implemented; and
  - The director has made a final inspection and confirmed the installation of required erosion control measures
2. In the amount of 25 percent of the estimated costs of original installation of the required erosion control measures. The security required shall not be released by the director until:
  - Three winters after the first security have passed without any substantial problem;
  - If substantial problem or failure, any needed cleanup has been completed, erosion control measures have been corrected, and three winters have passed without any substantial problems; and
  - The director has made a final inspection and confirmed ongoing maintenance of the erosion control measures.

### Violations

When a violation is determined the director may require that certain conditions be implemented or adhered to in a reasonable amount of time to correct the erosion problem. Each failure to comply or meet deadlines shall constitute a separate and distinct violation. The county and its agents may, with the property owner's consent or in an emergency, enter the property and make necessary repairs or corrections, or perform maintenance.

### **Findings**

Development of the proposed project would alter the drainage pattern of the project site, but would not result in an increased rate or volume of runoff. In fact, the proposed project would result in a slight decrease in both the peak discharge and volume of surface runoff at the project site, except for potentially small localized increases in peak discharge within the proposed vineyard blocks. These increases would be small and localized, and offset by decreases in the peak discharge of the immediately surrounding area. Therefore, this is considered a less-than-significant impact.



The primary reason for the decrease in runoff is the increase of surface roughness of land cover at the project site, which results in a lower runoff curve number in the hydrology analysis. Increased surface roughness is attributed to increased vegetation cover, which primarily results from the removal (management) of livestock grazing at the project site. Other factors contributing to the reduction in runoff, or lower curve numbers, are the use of a cover crop within all vineyard blocks and a more dense growth within the main channels (from removal of livestock grazing activities from the holding) that will increase the time of concentration within each onsite watershed. Since the project site is very rocky with bedrock close to the soil surface, it is expected that the majority of increased infiltration of water, resulting from a reduction in the volume of runoff, would be returned back to the channel shortly after precipitation events rather than percolating to groundwater.

Due to large areas of shallow bedrock forming stream channels, and similar or less runoff onsite, channel instability would not be affected with implementation of the proposed project. Potential downstream flooding from increased vegetation growth in Watershed 6 is expected to be minimal. Drainage system features (culverts and rock crossings) onsite would not result in flooding because they would be developed in compliance of Napa County requirements to accommodate 100-year precipitation flows and the rate and volume of runoff would not increase from the proposed project, and because these drainage features were determined to be appropriate for local hydrology conditions during a site visit (**Appendix M**). The proposed project would be required to meet maintenance and monitoring program requirements by Napa County (Section 18.108.135 – Oversight and operation), which would assure that ECP measures would maintain expected runoff flows over the long-term. This is considered a less-than-significant impact.

**Mitigation Measure 4.6-1:** No mitigation is required.

**Impact 4.6-2:** Development of the proposed project would alter the existing drainage pattern of the project site; however, a slight decrease in the volume and rate of runoff and sedimentation onsite would result in a less-than-significant impact to the water quality of receiving waters.

As discussed in the previous impact, development of the proposed project would alter the existing drainage pattern of project site from the removal of existing vegetative land cover, soil ripping and earthmoving activities, and the removal of trees. Alteration of the existing drainage pattern resulting in an increased volume and rate of runoff to these drainages could result in increased loading of sediment and pollutants to onsite drainages, and subsequently offsite streams and Milliken Reservoir. The increased accumulation of sediments in receiving waters could alter channel geometry, and increased fine-grained sediment accumulation could result in increased turbidity and alteration of crucial biological

habitat conditions. The increased loading of nutrients, including chemicals applied to vineyard areas, could result in eutrophication and toxic conditions. Increased sediment accumulation and removal of vegetation in riparian habitats has the potential to result in adverse impacts to water temperature. Degradation of water quality could impact chemical and biological conditions and beneficial uses of onsite and receiving waters.

### **Sediment Loading**

Since mainstem Napa River has been listed as sediment-impaired according to the Clean Water Act, Section 303 (d), no net increase in sediment yield from the project site should be allowed to occur from development of the proposed project. As discussed in **Impact 4.4-1** there would be no net increase in sediment erosion or sediment yield offsite from development of the proposed project compared to existing conditions. In fact, total sediment erosion and sediment yield including gravel, sand, silt, and clay would decrease from existing conditions under the proposed project. As discussed in the setting section above, Milliken Reservoir captures a significant fraction of sediment that is transported offsite to the reservoir. Since less sediment would be transported offsite with the proposed project, a smaller amount of sediment from the project site would potentially contribute to fine grained sedimentation in Milliken Reservoir and the Napa River. In addition, since less fine grained sediment would be transported from the project site the potential for turbidity impacts to receiving waters would likely decrease as well. This is considered a less-than-significant impact.

### **Chemical Loading**

Livestock grazing has historically occurred throughout the project site. Waste accumulation associated with livestock grazing has been determined as a significant source of pathogens (Krottje et al., 2005) and nutrients (Wang et al., 2004) in the Napa River. The proposed project would remove (manage) livestock grazing at the project site. The reduction of livestock grazing activities compared to existing conditions would decrease the amount of potential nutrient loading to receiving waters. Further, livestock access to Milliken Creek and its tributaries would be prevented by fencing, which would prevent waste and nutrient accumulation directly in these waters. This is considered a beneficial impact.

Operation of the vineyard under the proposed project would utilize Integrated Pest Management (IPM) techniques to the greatest extent feasible. IPM techniques rely on non-chemical means of pest management and selective chemical use and can reduce pesticide pollution. When needed, the application of chemicals, including fertilizers and pesticides, would occur. Fertilizers proposed for use at the project site include nitrogen, calcium, phosphorus, potassium, micro-nutrients, and compost. Pesticides proposed for potential use at the project site include a variety of herbicides, mildewcides, and rodenticides.

Fertilizer use can result in runoff laden with excessive plant nutrients, which can lead to eutrophication and algal growth in receiving waters. Pesticide use can result in runoff contributing to toxic conditions in receiving waters.

Fertilizers would be generally applied by fertigate (drip system injections) (**Table 4.5-1**). Pesticides would be generally applied by foliar sprays, strip sprays, drip system injections or baiting. Foliar sprays, drip system injections, and baiting techniques would limit the affected area of chemical use to the plants. Compost (soil amendment) and copper sulfate are solids that would be broadcasted in the vineyard and the reservoir, respectively. Broadcast spraying can be an imprecise technique, as it is affected by wind and some of these materials could be received by other areas. However, under the proposed project the quantity of these solids applied via broadcast spraying is not considered substantial, and any amount of solids received by non-vineyard or reservoir areas is not expected to degrade these environments. Additionally, the proposed project includes the maintenance of stream setbacks as discussed above. These setbacks provide a vegetated buffer area between the streams and vineyard rows where chemical application occurs. The buffer areas can also absorb nutrients from fertilizers before they enter the streams, as discussed above.

### Temperature

Water temperature is significant because it influences a number of chemical processes within water bodies. The elevation of the water temperature is influenced by ambient air temperature, humidity, riparian vegetation, topography, surrounding land use, and flow conditions.

The proposed project would not alter the topography of onsite creeks. As discussed in **Impact 4.6-1**, the removal (management) of livestock grazing at the project site would allow riparian forest areas to recover to a more natural state resulting in an increase in drainage channel roughness, especially in the main drainage feature in Watershed 6 of the hydrology study. Increased vegetation in the drainage channel would provide increased shaded areas and surface roughness. Increased surface roughness results in an increased number of obstacles that can trap sediments and ground stability to reduce the loosening of topsoil and erosion into channels. The stream setbacks are consistent with Napa County stream setback requirements, based on slope; setbacks of 20 feet would be maintained around drainages that do not meet Napa County's definition of a stream; and 50-foot minimum setbacks would be maintained around all wetlands. All setbacks maintained onsite would also help to preserve natural stream function. As determined from the sediment budget discussed in **Impact 4.4-1**, sediment yield from the Circle S Ranch and sediment accumulation in receiving waters would not increase, but decrease with the proposed project. Potential impacts from sedimentation that can increase water temperature, such as alteration of stream geometry and an increase in darker fine sediment, would not occur.

Additionally, stream restoration measures, as discussed in **Section 4.6.3-1** above, would introduce obstacles to sediment entering streams and provide new sources of shade. These effects would preserve and enhance natural stream function. This is considered a less-than-significant impact.

**Mitigation Measure 4.6-2:** No mitigation is required.

**Impact 4.6-3:** The proposed project would not be located in a FEMA flood zone, but would be located near one watercourse that was identified to be a flood hazard during field observations. Development of the proposed project would not exacerbate flooding or expose people or structures to a risk of loss. This is considered a less-than-significant impact.

Development of the proposed project at the Circle S Ranch would not be located within a FEMA mapped flood zone from a 100- or 500-year precipitation event. As discussed in the setting section, geomorphic mapping and observations revealed a flood hazard along the unconfined stream that parallels the boundaries of proposed Blocks 1A, 1B, 2A, and 2B. These blocks drain into the seasonal wetlands located within the valley floor of the Foss Valley. According to the hydrology analysis in **Impact 4.6-1**, no increase in the rate or volume of runoff is anticipated to occur along this watercourse under the proposed project conditions, according to the hydrologic analysis (Ayres, 2006). This is because the hillside portion of the watershed to the alluvial fan reach of this watercourse would remain natural after development of the proposed project. Three 10,000 gallon storage tanks would be constructed within proposed vineyard block areas (**Figure 4.6-2**). The tanks would provide new obstacles to runoff but are not considered to be large enough to substantially alter the pattern of runoff onsite. Therefore, the proposed project would not exacerbate, impede or redirect flood flows or expose people or structures to flooding hazards. Development of proposed Blocks 1A, 1B, 2A and 2B would subject these vineyard areas to potential existing flooding hazards. Flooding of these areas would most likely result in increased overland flows and the deposition of silt and sand. Overland flows and the deposition of sediments would occur in areas proposed to consist of vine rows and vegetative cover. It is not anticipated that the deposition of these sediments would substantially alter the character or affect the agricultural use of these areas. The proposed deer fencing for wildlife corridors would consist of wire fences that flows could easily pass through without obstruction. This is considered a less-than-significant impact.

**Mitigation Measure 4.6-3:** No mitigation is required.

**Impact 4.6-4:** The proposed project would require the use of local groundwater resources for irrigation purposes, which would alter local groundwater levels and local groundwater dynamics. However, effects to groundwater levels would not cause substantial drawdown in

offsite wells, and effects to groundwater supplies would not be expected to be substantial. After mitigation this would be considered a less-than-significant impact.

The proposed vineyard areas would, in part, be irrigated by groundwater from four existing onsite wells and four proposed onsite wells (**Figure 4.6-2**). Use of groundwater for irrigation would increase demand for local groundwater resources. Based on discussion with the property owner: frost protection would occur from wind machines and no groundwater would be used for this purpose; for the first three years of the proposed project, groundwater demand for vineyard is estimated to be 203 af of groundwater per season, based on a vine establishment application rate of 0.5 af per acre per season; following the first three years of growth, groundwater demand is estimated to be 142 af per season, because the vines would be considered mature and would require an application rate of approximately 0.35 af per acre per season; and under the proposed project up to six residences would demand groundwater, which is estimated at 3.0 af per year, based on a rate of 0.5 af per residence (RCS, 2007; **Appendix J**; Tom Adams, PPV, September 2008). These estimates are based on the irrigation of the entire 405 net acres of proposed and existing vineyard with groundwater. As discussed in the setting section, it is anticipated that groundwater would be used for irrigation of 373.7 acres of vineyard, which would yield groundwater demand of 186.9 af per season (189.9 including residences) for the first three years and 130.9 af (133.9 including residences) per season thereafter. Therefore, estimates of groundwater use in this analysis (RCS, 2007), based on the irrigation of 405 acres of vineyard are considered conservative, because approximately 31-acres of the development would be irrigated with surface water. Furthermore, proposed groundwater estimates incorporate existing groundwater use on the property. It is expected groundwater would be pumped during the irrigation season, typically the 18-week period from May through September. Groundwater would also be stored in three proposed onsite water storage tanks (10,000 gallons each; **Figure 4.6-2**) for operational flexibility.

Pumping from the eight groundwater wells onsite would result in drawdown of local groundwater, and could decrease groundwater levels in offsite wells. The increased demand for groundwater resources would alter local groundwater dynamics. A depletion of the volume of local groundwater supplies and interference with existing groundwater recharge at the project site could potentially result in a net deficit in aquifer volume.

### Methodology

To evaluate the effects on groundwater resources from the proposed project, pumping tests were completed for one of the existing Circle S Ranch wells (**Appendix J**). The tests determined the proposed project's effect on measurable drawdown in offsite wells that are hydrogeologically connected to those onsite and the availability of local groundwater resources. To determine the impact of water use on groundwater levels, two pump tests

were completed. The first test undertaken was a three-point step-drawdown pumping test. The objective was to pump at three different rates to determine the pumping capacity of the onsite well and a reasonable pumping rate for the subsequent constant rate test, as well as to generate data on water level drawdown in the subject well and onsite monitoring wells. The second test undertaken was a 48-hour constant-rate pumping test. The objective was to pump continuously at a rate near but greater than the future operational rate, in order to stress the groundwater system and generate data on water level drawdown in the subject well and onsite monitoring wells, representative of severe pumping conditions.

Well 4 on the Circle S Ranch was selected for the pump tests because it currently is equipped with a permanent pump and is located near other onsite wells (**Figure 4.6-2**). Due to the extensive amount of area covered by the 325.5 acres of proposed vineyard that is anticipated to require groundwater, it is expected that no one well could supply groundwater to these areas, and to an extent all eight groundwater wells would be utilized. At this time the extent to which each well would be used is not known. Wells monitored for groundwater level drawdown during the pump tests included existing onsite Wells 1, 2 and 3. These wells are considered to represent a viable water level monitoring network for evaluating groundwater level impacts from the proposed project because they have approximately the same casing and perforation intervals as Well 4, and each is located in a different direction and at a different distance from Well 4. They would be particularly useful in monitoring the cone of pumping depression created by Well 4. In relation to Well 4, Well 1 is located 3,800 feet west-southwest, Well 2 is located 1,680 feet east-southwest, and Well 3 is located 3,200 feet south-southwest. Thus, evaluating a pump test at Well 4 and monitoring Wells 1, 2 and 3 would be representative of impacts to local groundwater levels from groundwater use under the proposed project.

Aquifer parameters determined by the pump tests were then used to calculate theoretical drawdown at various pumping rates and various durations of continuous pumping. These calculations estimate drawdown induced in any onsite and hydrogeologically connected offsite wells. To determine effects on the availability of local groundwater resources, groundwater recharge and storage directly related to the Circle S Ranch were estimated and evaluated in the context of the proposed project.

### Groundwater Level Analysis

A constant-rate test was performed between May 17 and 19, 2007, by pumping at 176 gpm for a continuous 2,925-minute (48.75-hour) period. **Table 4.6-6** shows the monitored groundwater drawdown for each of the four wells. Pumping at Well 4 resulted in groundwater level drawdown at Well 4 of 181.6 feet. Data for the monitoring wells reveals that constant pumping induced water level drawdown of 0.78 and 0.64 feet in Wells 1 and 2, respectively. These wells lie at significantly different distances and in different directions

from Well 4, yet similar groundwater level drawdowns were observed. A water level drawdown of 0.02 feet was monitored in Well 3. Since this is such a minor decline in the groundwater level, it was likely part of the natural fluctuations in water levels in the area, or it may be an artifact of the heterogeneity of the local fractured rock aquifer system. Water level recovery monitoring revealed that water levels in Well 4 and the monitoring wells had not fully recovered to their pre-test static water level following a period of five days after the pump had been turned off in Well 4. Such slow water level recovery is not uncommon in wells constructed in the Sonoma Volcanics of Napa County (RCS, 2007).

**TABLE 4.6-6**  
THEORETICAL WATER LEVEL CHANGES<sup>1</sup>

Well	Distance (feet)	Monitored 2,925 min Water Level Drawdown (feet)	Calculation of Theoretical Water Level Drawdown (feet)				
			After 2,925 minutes	After 30 days	After 60 days	After 90 days	After 126 days
4	-	181.6	181.6	209.4	216.6	220.7	223.7
2	1,680	0.64	15.3	41.8	48.9	53.1	56.0
3	3,200	0.02	5.4	28.8	35.7	39.9	42.8
1	3,800	0.78	3.5	25.4	32.3	36.4	39.3

<sup>1</sup> It should be noted that these calculations assume Well 4 is pumped continuously and at a constant rate. In reality such a scenario would never occur, instead a maximum 14- to 15-hour per day operational pumping period (60 percent operation basis) is suggested for future pumping of Well 4 and other onsite wells.

Source: RCS, 2007

Note: Well data are organized by distance from the monitoring well.

#### *Theoretical Drawdown Calculations*

Theoretical drawdown calculations were made for pumping durations of 2,925 minutes, 30 days, 60 days, 90 days, and 126 days (18 weeks of a typical vineyard irrigation season).

**Table 4.6-6** shows results for each of the theoretical calculations. For each of the five calculated pumping durations, groundwater level drawdown was less as the radial distance of the monitoring well from Well 4 increased. This is because the swell of the cone of depression surrounding the pumping well becomes smaller as the distance from that well increases. The maximum calculated drawdown after 126 days of pumping is 56.0 feet in Well 2, and the minimum drawdown after 126 days is 39.3 feet in Well 1. For any of the five calculated pumping periods, groundwater level drawdown for known offsite wells would be at a maximum similar to Well 1 because of their distance from onsite wells. Groundwater level drawdown observed in the monitoring wells for the 2,925 min scenario are clearly less than those estimated in the theoretical calculations, partially because of the known heterogeneity of the Sonoma Volcanics material in which the tests are completed. Similar findings have occurred from a very large number of pumping tests in a wide variety of geologic materials.

## Groundwater Resources Analysis

As discussed, and illustrated in **Figure 4.6-2**, groundwater resources available to the Circle S Ranch are defined by the fractures and joints within the Sonoma Volcanics geology. While groundwater is potentially available to the property from the large spatial extent of Sonoma Volcanics in the region, knowledge of the availability of resources is unknown due to the heterogeneous nature of the geology. Therefore, this analysis of available groundwater resources is limited to the spatial extent of the project site.

To estimate the magnitude of the volume of groundwater currently in storage in the saturated zone of the geology below the project site, the factors considered include the maximum estimated thickness of Sonoma Volcanics, recent depth to water in typical onsite wells, the area of the project site, and specific yield of rocks. The depth of the rocks minus the static water levels resulted in a saturated thickness of 750 feet. The Circle S Ranch area used in the estimation is 1,593 acres. The specific yield of the rocks was determined to be 0.02 from analysis of the pump tests results discussed earlier. The resulting magnitude of groundwater currently in storage that could be extracted solely beneath the property is approximately 23,800 af (RCS, 2007). Relative to the 23,800 af of groundwater beneath the project site, implementation of the proposed project would result in the demand for approximately 203 af of water for each of the first three years of vine growth and approximately 142 af for all subsequent years of operation based on irrigating 405-acres of vineyard; however, as previously stated, this estimate is considered conservative because approximately 31-acres of vineyard would be irrigated with surface water. This demonstrates that currently sufficient groundwater resources are available beneath the project site. Since static water levels are known to change in wells seasonally and from year to year, the amount of water in storage beneath the project site will also change. However, the 203 af per year maximum demand from the proposed project represents less than one percent of current storage. Therefore, fluctuations in storage would not be substantial. Additionally, the anticipated groundwater use of the proposed project would also be below the County's allowable groundwater allotment of approximately 796 af for the holding

To estimate the potential amount of average annual recharge to groundwater below the project site, the long-term average annual rainfall and the estimated long-term average annual rainfall available to deep percolation were considered. Long-term average annual rainfall near the project site has been approximately 35 inches or 2.91 feet per year (RCS, 2007). Based on RCS geologist experience in estimating recharge in different geologic materials, rainfall available for deep percolation to groundwater was estimated at approximately seven percent. The Circle S Ranch area used in the estimation is 1,593 acres. The resulting estimate of recharge to groundwater beneath the project site is approximately 325 af per year (RCS 2007: Appendix J). Relative to the 325 af per year of recharge to the project site, maximum demands of 203 af of water per year from the



proposed project would constitute 62 percent of annual recharge. This demonstrates that in an average year of rainfall, sufficient recharge is provided to groundwater beneath the project site. Furthermore, with the implementation of **Mitigation Measures 4.2-4, 4.2-5, 4.2-6, 4.2-7, 4.2-13, and 4.2-19** the project area would be reduced by approximately 36 gross acres, which would reduce the anticipated use of groundwater by approximately 12.5 af per year (assuming 25 net/planted acres within the 36 gross acres)

## Findings

Groundwater supply from the four onsite wells for the proposed project would not be expected to result in lowering of groundwater levels in offsite wells or decreased availability of groundwater resources. The nearest known offsite well from the monitoring wells is located approximately 4,000 feet from the nearest onsite well (Well 2). This offsite well is approximately 2,100 feet from the nearest proposed onsite well. The nearest neighbors to the project site are located approximately 600 feet from the proposed well located in proposed Block 30 and approximately 1,900 feet from north of existing Well 2. While the pump tests and theoretical drawdown calculations do result in temporary groundwater level drawdown within the cone of depression from pumping wells, drawdown decreases as the radius from the pumping well increases and the magnitude of drawdown is not substantial or prolonged beyond natural conditions of recovery. Further, due to the large number of wells located throughout the project site, no one well would be pumped intensely, such as the operation that occurred during the pump test. Thus, the cone of depression and effects to drawdown of local groundwater levels would be much less from the proposed project. It is not anticipated that nearby groundwater levels in offsite wells or for neighbors would be substantially affected by the proposed project.

Based on aquifer parameters determined from the pump tests, as well as local geology and rainfall, groundwater storage beneath the property was determined to be substantial. In addition, maximum water demands from irrigation of the proposed project were determined to constitute approximately 62 percent of annual recharge beneath the property. However, groundwater dynamics of the local area are subject to seasonal and annual fluctuations due to variation in rainfall amounts. In the case of a year with extremely low precipitation, substantial storage would still exist beneath the project site, but recharge could be affected to the extent that water demands from the proposed project are greater than the recharge volume, resulting in a net deficit in aquifer volume and a lowering of local groundwater levels. This is considered a potentially significant impact.

**Mitigation Measure 4.6-4:** The Applicant shall be required (at the Applicant's expense) to provide well monitoring data and analyses of the collected data from a qualified professional Geologist or a Certified Hydrogeologist on a seasonal basis to the County Conservation, Planning and Development Department. Such data shall include, but not be limited to, static

water levels, pumping water levels, instantaneous flow rates and cumulative pumped volumes for each of the four existing onsite wells. These wells are each located in separate geographic areas of the project site (**Figure 4.6-2**); therefore, monitoring of these wells would help to provide data on groundwater conditions generally representative of the entire project site. Pumping rates and volumes shall be monitored by the use of a totalizer flow dial (or similar technology) and water levels shall be monitored by the use of an automatically recording pressure transducer (or similar technology). The automatic recorder shall be set to collect data approximately every 15 minutes for the first year to provide sufficient data for the purpose of operational monitoring; the frequency between data recording by the transducer may be increased in the future. These data shall be downloaded every 2 to 3 months. This will help to provide a quantity of data that is reasonable to review, as well as account for variations in seasonal groundwater conditions.

Water usage shall be minimized by use of best available control technology and best management conservation practices. In the event that changed circumstances, or significant new information, or the results of the monitoring data, provide substantial evidence that use of the onsite wells and the groundwater systems referenced in the ECPA would significantly affect the groundwater basin, the Director of Environmental Management shall be authorized to require additional reasonable conditions on the Applicant, or revocation of this permit, as necessary to meet the requirements of the Napa County Groundwater Ordinance and protect public health, safety and welfare. Such additional mitigation might include shifting of groundwater production to other onsite wells for a period of time. That recommendation shall not become final unless and until the Director has provided notice and the opportunity for a hearing in compliance with County Code Section 13.15.070 (G)-(K).

Impact after implementation of monitoring is considered less than significant.

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## 4.7 TRANSPORTATION AND TRAFFIC

### 4.7.1 SETTING

#### 4.7.1-1 REGIONAL ROADWAY NETWORK

State Route 29 (SR-29) runs in a north/south direction between the cities of Vallejo and American Canyon to the south, and the City of Napa and other Napa County communities to the North. In the vicinity of the project area SR-29 has two lanes in each direction. SR-29 is a two-lane rural throughway north of Yountville and a 4-lane rural throughway south of Yountville (Napa County, 2007).

State Route 121 (SR-121) winds from its junction with State Route 37 eastward through Sonoma and Napa Counties to its end near Lake Berryessa in Napa County. Caltrans traffic counts in the vicinity of the proposed project are 8,400 cars per day (**Appendix K**). SR-121 has a designation as a two-lane rural throughway (Napa County, 2007).

Silverado Trail runs in a north/south direction between the City of Napa and the City of Calistoga. The Silverado Trail is parallel to and is located east of SR-29. The Silverado Trail has a designation as a two-lane rural throughway (Napa County, 2007).

#### 4.7.1-2 LOCAL ROADWAY NETWORK

Atlas Peak Road runs in a north/south direction between SR-121 and private property used for agricultural operations. Atlas Peak Road is a four-lane divided road from SR-121 to Hillcrest Drive, at which point it narrows to a two-lane road. Traffic counts provided by Caltrans indicate the maximum traffic volume along the four-lane segment of Atlas Peak Road to be 8,200 cars per day. Traffic counts along the two-lane segment of Atlas Peak Road between Hillcrest Drive and Westgate Road indicate a maximum of 1,760 cars per day (**Appendix K**). Atlas Peak Road is designated as a local roadway (Napa County, 2007).

### 4.7.2 REGULATORY FRAMEWORK

The Napa County General Plan (2008) seeks to provide safe and efficient movement on well-maintained roads throughout the County, meeting the needs of Napa County residents, businesses, employees, visitors, special needs populations, and the elderly. The following are related goals and policy guidelines:

Goal CIR-2: The County's transportation system shall provide for safe and efficient movement on well-maintained roads throughout the County, meeting the needs of Napa

County residents, businesses, employees, visitors, special needs populations, and the elderly.

Policy CIR-13: The County seeks to provide a roadway system that maintains current roadway capacities in most locations and is both safe and efficient in terms of providing local access. The following list of improvements...has been supported by policy makers within the County and all five incorporated cities/town, and will be implemented over time by the County and other agencies to the extent that improvements continue to enjoy political support and funding becomes available:

Countywide

- Install safety improvements on rural roads and highways throughout the county including but not limited to new signals, roundabouts, bike lanes, shoulder widening, softening sharp curves, etc.

Policy CIR-15: The County shall maintain and apply consistent highway access standards regarding new driveways to minimize interference with through traffic while providing adequate local access. The County shall also maintain and apply consistent standards (though not exceeding public road standards) regarding road widths, turn lanes, and other improvements required in association with new development. Application of these standards shall consider the level of improvements on contiguous roads.

Policy CIR-16: The County shall seek to maintain an adequate level of service on roads and at intersections as follows. The desired level of service shall be measured at peak hours on weekdays.

- The County shall seek to maintain an arterial Level of Service D or better on all county roadways, except where maintaining this desired level of service would require the installation of more travel lanes than shown on the Circulation Map.
- The County shall seek to maintain a Level of Service D or better at all signalized intersections, except where the level of service already exceeds this standard (i.e., Level of Service E or F) and where increased intersection capacity is not feasible without substantial additional right-of-way.
- No single level of service standard is appropriate for un-signalized intersections, which shall be evaluated on a case-by-case basis to determine if signal warrants are met.

### 4.7.3 IMPACTS AND MITIGATION MEASURES

#### 4.7.3-1 SIGNIFICANCE CRITERIA

For the purposes of this analysis, the proposed project would have a significant impact if it would:

- Cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume -to-capacity ratio on roads, or congestion at intersections);
- Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways;
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
- Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Result in inadequate emergency access;
- Result in inadequate parking capacity; or
- Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

A two-lane road is generally able to accommodate 14,000 vehicles per day, while operating at an acceptable level of service (**Appendix K**).

#### 4.7.3-2 IMPACTS AND MITIGATION MEASURES

**Impact 4.7-1:** Construction of the proposed project would temporarily increase traffic volumes on roadways in the area; however, the increase in traffic would not be substantial and a less-than-significant impact would result.

The proposed project would generate vehicle and truck trips to and from the project site. Trips would result from construction workers and trucks delivering heavy equipment and materials to the project site. Equipment would stay onsite for the duration of construction. Construction activities are intermittent and short-term in nature. It is estimated that there would be 50 to 75 worker trips per day from April 1st to September 15th. During this time the bulk of the heavy equipment would be transported to the project site creating an estimated 48 truck trips. From September 15<sup>th</sup> to March 31<sup>st</sup> an estimated 6 to 10 workers would be needed onsite per day for maintenance activities, including maintenance of erosion control measures. Based on 2005 traffic counts along Atlas Peak Road, a

maximum of 8,290 cars per day travel between SR-121 and Hillcrest Drive and 1,760 cars per day travel between Hillcrest Drive and Westgate Road. There would be a maximum of 75 worker trips per day and 25 materials and heavy equipment deliveries per day, resulting in an increase of approximately 100 vehicle trips per day during construction (**Section 3.4.4**). With the addition of 100 vehicle trips per day, Atlas Peak Road would operate at 59.9 percent of capacity between SR-121 and Hillcrest Drive and 13.3 percent of capacity between Hillcrest Drive and Westgate Road. Currently the roadway capacity between SR-121 and Hillcrest Drive is 59.2 percent and 12.8 percent along Atlas Peak Road between Hillcrest Drive and Westgate Road. Both roadway segments would have an increase in traffic capacity of less than 1.0 percent and would not exceed capacity. Also, worker trips would not occur during the peak hours and therefore, the impact due to construction traffic would be less than significant.

**Mitigation Measure:** No mitigation is required.

**Impact 4.7-2:** Operation of the proposed project would increase traffic volumes on roadways in the area; however, the increase in traffic would not be substantial and a less-than-significant impact would result.

Vineyard operations would be carried out over three distinct seasons. The pruning season would take place from January to about the first week of April, and this season would require approximately 24 to 30 workers. The “suckering” season would begin about the first week of April and end about the second week of July, and would require approximately 24 to 30 workers. The harvest season would begin about the second week of August and end around the second week of October and would require approximately 60 to 80 workers. Thus, the maximum number of one-way workers trips during routine operation would be 160. Including a conservative four grape truck trips per day, the maximum increase in vehicles on Atlas Peak Road would be 164. With the addition of 164 vehicle trips per day, Atlas Peak Road would operate at 60.4 percent of capacity between SR-121 and Hillcrest Drive and 13.7 percent of capacity between Hillcrest Drive and Westgate Road. Currently the roadway capacity between SR-121 and Hillcrest Drive is 59.2 percent and 12.8 percent along Atlas Peak Road between Hillcrest Drive and Westgate Road. Both roadway segments would have an increase in traffic capacity of less than 1.2 percent and would not exceed capacity. Also, worker trips would not occur during the peak hours and therefore, the impact due to construction traffic would be less than significant.

**Mitigation Measure 4.7-2:** No mitigation is required.

**Impact 4.7-3:** Installation of the proposed project, and to a lesser extent subsequent vineyard activities, could increase potential conflicts between vehicles on area roads given the additional vehicles that would be entering and exiting the project site; however, traffic volumes as a result of construction and operation of the project would not increase



substantially (discussed in **Impacts 4.7-1** and **4.7-2**), the width of the road to and from the project site can accommodate a variety of vehicle types, and the available site distance for drivers in most areas of the road is not unduly restricted. A less-than-significant impact would result.

Atlas Peak Road is a four-lane road from SR-121 to Hillcrest Drive, at which time it narrows to a two-lane road with paved shoulders as it passes the Silverado County Club. Atlas Peak Road is generally about 24 feet wide; however, it narrows to 16 to 18 feet and has minimal, if any, shoulders north of Westgate Drive. Atlas Peak Road is not a through road and only services local traffic. The posted speed limit is 45 miles per hour (mph), with reduced-speed curves posted at 25 mph.

Atlas Peak Road rolls and winds in a horizontal and vertical alignment; however, the available sight distance for drivers in most areas of the road is not unduly restricted (ESA, 2005). An existing one-lane site access driveway on the western side of Atlas Peak Road (south of proposed Block 33) provides adequate site distance. A proposed site access driveway on the eastern side of Atlas Peak Road (near proposed Block 21) is also located to provide adequate sight distance for vehicles exiting and approaching the access point. However, advance warning signs (e.g., "Intersection Ahead" and/or "Truck Crossing Ahead") will be posted on Atlas Peak Road consistent with Napa County sign placement standards to alert motorists of an intersection ahead with turning vehicles. This will be included as a condition of approval. A less-than-significant impact would result.

**Mitigation Measure 4.7-3:** No mitigation is required.

**Impact 4.7-4:** Development and subsequent operation of the proposed project would increase wear-and-tear of area roads; however, the increase in wear-and-tear would not be substantial and a less-than-significant impact would result.

The use of trucks to transport equipment and materials to and from the project site during construction and operation could affect road conditions by increasing the rate of road wear. Roads, such as SR-121 and Atlas Peak Road from SR-121 to Hillcrest Drive were constructed to accommodate a mix of vehicle types, including heavy trucks. Atlas Peak Road north of Hillcrest Drive is a local road, which is generally not built with the pavement thickness that would withstand substantial or continuous traffic. However, the small amount of trucks on Atlas Peak Road (estimated at four per day) during harvest season and the 10 percent increase in vehicle trips are not considered substantial. There would be less-than-significant impact on the wear-and-tear of area roadways.

**Mitigation Measure 4.7-4:** No mitigation is required.

## REFERENCES

ESA, 2005. *Memorandum: Project Traffic-Related Impacts Associated with Proposed Development of Vineyard at Circle S Ranch*. ESA Associates. October 21, 2005.

Napa County, 2007. Draft General Plan Circulation Element, Napa County. California. Available online at <http://www.napacountygeneralplan.com/library/pdgpu.htm>.

Napa County, 2008. *Napa County General Plan*. June 2008. Available online at <http://www.co.napa.ca.us/GOV/Departments/DeptDocs.asp?DID=8&T=68&V=0&od=0>.

# CHAPTER 5.0

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## ALTERNATIVES TO THE PROPOSED PROJECT

### 5.1 INTRODUCTION

#### 5.1.1 CEQA REQUIREMENTS FOR ALTERNATIVES ANALYSIS

This chapter reviews the range of alternatives considered while drafting this Environmental Impact Report (EIR). The purpose of the analysis of alternatives in an EIR is to describe a range of reasonable alternative projects that could feasibly attain most of the objectives of the proposed project and to evaluate the comparative merits of the alternatives (CEQA, 2006: Section 15126.6(a)).

Additionally, the California Environmental Quality Act (CEQA) *Guidelines* Section 15126.6 (b) requires consideration of alternatives that could reduce to a less-than-significant level or eliminate any significant adverse environmental effects of the proposed project, including alternatives that may be more costly or could otherwise impede the proposed project's objectives. The range of alternatives evaluated in an EIR is governed by a "rule of reason," which requires the evaluation of alternatives "necessary to permit a reasoned choice." Alternatives considered must include those that offer substantial environmental advantages over the proposed project and may be feasibly accomplished in a successful manner considering economic, environmental, social, technological, and legal factors. An EIR does not need to consider every possible alternative, but must consider alternatives that will foster informed decision-making and public participation.

As required by CEQA *Guidelines* Section 15126.6 (e), the No Project Alternative must be evaluated as part of the EIR. The purpose in addressing the No Project Alternative is to allow decision makers the ability to compare the impacts of the proposed project versus no project. According to the CEQA *Guidelines*, the No Project Alternative shall discuss what would reasonably be expected to occur in the *foreseeable future* if the project were not approved (CEQA, 2006: Section 15126.6 (e) (2)). In addition to the No Project Alternative, a Reduced Intensity Alternative and a Phased Alternative were reviewed.

### 5.1.2 PROJECT OBJECTIVES

Specific project objectives of #P06-01508-ECPA are to:

- Plant between 400 and 415 gross acres of vineyard on areas of property containing the appropriate soil and microclimate;
- Minimize soil erosion through vineyard design that avoids erosion-prone areas and controls erosion within the vineyard rather than capturing soil after it has been displaced; and
- Protect water quality through avoidance of wetlands/streams, road improvements/abandonment, riparian restoration, and replacing stream crossing with culverts and bridges.

Objectives associated with the installation and operation of the proposed vineyard are to:

- Develop additional vineyard acreage and produce premium quality grapes;
- Make efficient use of groundwater;
- Farm vineyards in a sustainable manner to the greatest extent possible;
- Provide opportunities for vineyard employment and economic development in Napa County;
- Take advantage of the site's unique topography, soils and microclimate for vineyard development; and
- Minimize earthmoving activities during development of the project and implement effective erosion control measures that can be cost effectively maintained in perpetuity.

### 5.1.3 KEY IMPACTS OF THE PROPOSED PROJECT

Key impacts of the proposed project are discussed in **Chapter 4.0**. Development of the proposed project would result in impacts to air quality, biological resources, cultural resources, geology and soils, hydrology and water quality, transportation and traffic, and hazardous materials. Potentially significant impacts to air quality, biological resources and cultural resources would be limited to the duration of the construction of #P06-01508-ECPA. Potentially significant impacts to hydrology and water quality, transportation and traffic, and hazardous materials would occur during the construction of #P06-01508-ECPA, as well as during the operation and maintenance of the proposed vineyard. Impacts would be reduced to less-than-significant levels with the implementation of the mitigation measures outlined in **Chapter 4.0**. There are no significant and unavoidable impacts associated with the proposed project.

## 5.2 ALTERNATIVES TO THE PROJECT

### 5.2.1 NO PROJECT ALTERNATIVE

The development of project features associated with #P06-01508-ECPA would not occur under the No Project Alternative. Impacts identified in **Chapter 4.0** would be avoided and the existing environmental setting would remain.

With the No Project Alternative, the project site would continue to operate as a cattle ranch and the approximately 27 acres of existing vineyards on the project site would continue to be operated and maintained. No changes to the existing agricultural facilities, fencing, wells, access roads or open space areas would occur. The approximately 31 percent of the vegetation cover proposed for removal through the proposed project would remain with the No Project Alternative, including 289 acres of oak woodlands and approximately 170 acres of other cover types, which include grassland and non-oak woodlands. Under the No Project Alternative, cattle would continue to have unlimited access to the watercourses, thereby affecting water quality, native species through overgrazing and sediment yield. Sediment yield offsite would remain at the estimated current rate of 1,117.8 tons per year (30 percent more than with the proposed project).

Other than the potential use of hazardous materials associated with the maintenance of the existing vineyard, no potential impacts identified in **Chapter 4.0** would occur under the No Project Alternative. The proposed development areas would remain primarily grasslands and oak woodlands and the No Project Alternative would be consistent with Napa County's Conservation Regulations. However, the No Project Alternative would not achieve the objectives of #P06-01508-ECPA, including the installation and operation of additional vineyard.

### 5.2.2 REDUCED INTENSITY ALTERNATIVE

Under the Reduced Intensity Alternative, less vineyard acreage would be developed than is proposed under #P06-01508-ECPA. The objectives of the Reduced Intensity Alternative are to further reduce impacts to oak woodlands on the property, avoid impacts to Northern Vernal Pools and rock outcrops in and around proposed Block 2C, as well as protect prime upland nesting habitat and overwintering habitat for the western pond turtle. With the Reduced Intensity Alternative, Blocks 1A, 2A and 2B would be avoided to eliminate impact to Blue Oak Alliance and reduce impact to Mixed Oak Alliance. Proposed Block 2C would be avoided to eliminate impact to Northern Vernal Pools and rock outcrops. Proposed Blocks 1B, 6C, 8, 10A, 10B, 12A, 13, 16, 17B, 18, 25C, 26, 27, 29, 32, and the cleared area proposed between Blocks 9 and 10B would be modified to maintain a 100 foot buffer along water habitats surrounded by open grassland and agricultural areas (including Milliken

Creek and the northern and middle tributaries running through the western portion of the site) to protect prime upland western pond turtle nesting habitat and to maintain a 275 foot buffer along water features that are surrounded by oak woodland (including the reservoir and surrounding drainages, portions of Milliken Creek, a portion of the middle tributary flowing south of Block 9, and a portion of the southernmost stream on site) to provide ample protection of overwintering western pond turtle habitats. In all, avoiding these areas would result in a reduction of approximately 52 gross acres of developed area, from approximately 459 acres to approximately 407 gross acres. All other mitigation associated with the proposed project for avoidance and/or minimization of impacts to biological resources would apply with the Reduced Intensity Alternative.

With the Reduced Intensity Alternative, construction-related dust and particulate matter would be generated, additional vehicles would travel to the project site during project construction and operation compared to current conditions, and odors would be generated. These impacts are considered less than significant with the proposed project, and would similarly be anticipated to result in less-than-significant impacts under the Reduced Intensity Alternative, as the vineyard acreage would be decreased.

The Reduced Intensity Alternative would result in the potential to affect previously unknown cultural resources, and could result in the discovery and disturbance of unknown human remains. The mitigation measures included in the proposed project would be required for the Reduced Intensity Alternative to minimize potential impacts to cultural resources.

Like the proposed project, the Reduced Intensity Alternative would result in a reduction in erosion and sediment yield compared to current conditions; however, the Reduced Intensity Alternative would result in slightly greater sediment yield than what would occur with the proposed project, as sediment yield is greater for grasslands and oak woodlands than for vineyard (based on results of Erosion, Sedimentation and Geotechnical Assessment; Trso, 2008; **Appendix G**) The Reduced Intensity Alternative would not result in any changes that would alter the geologic setting to an extent that would initiate or exacerbate the potential for seismic hazards to occur on the property, resulting in a risk of loss of life or property.

The Reduced Intensity Alternative would require the use, storage and disposal of hazardous materials, similar to the proposed project. The release of hazardous materials into the environment during construction, operation and maintenance of the proposed project are potentially significant impacts. The mitigation measures included in the proposed project would be required for the Reduced Intensity Alternative to minimize potential impacts to hazardous materials to less-than-significant levels.

Like the proposed project, the Reduced Intensity Alternative would result in a reduction in the volume and rate of runoff compared to current conditions; however, the Reduced

Intensity Alternative would result in a slightly greater volume and rate of runoff than what would occur with the proposed project, as the volume and rate of runoff is slightly greater for grasslands and oak woodlands than for vineyards (based on results of Erosion, Sedimentation and Geotechnical Assessment; Trso, 2008; **Appendix G**). Changes to channel stability, the potential for downstream flooding, and impacts to water quality and groundwater resources were less than significant with the proposed project, and would similarly be anticipated to be less than significant under the Reduced Intensity Alternative, as the vineyard acreage and associated operational needs would be decreased. The Reduced Intensity Alternative would result in less demand to groundwater resources than the proposed project, as fewer vineyard acres would be developed.

Like the proposed project, the Reduced Intensity Alternative would not result in transportation and traffic impacts.

### 5.2.3 PHASED ALTERNATIVE

The project description under the Phased Alternative would be similar to the proposed project (with the development of approximately 378 acres of vineyard within 459 gross acres), with the exception that the length of construction time would be spread out over six additional years. Under the proposed project, vineyard construction would be completed in a single phase. Under the Phased Alternative, vineyard construction would occur in thirds over three year increments. Approximately 126 acres of vineyard (approximately 153 gross acres) would be developed the first year, another 126 acres would be developed three years later, and the final 126 acres would be developed six years after the first phase. Vineyard construction would be complete after seven years.

Although short-term impacts associated with the Phased Alternative would be incrementally less than those associated with the proposed project because less acreage would be converted at once, impacts would have the potential to be cumulatively greater with the Phased Alternative from repeated disturbance by spreading the construction out over six additional years.

After construction, the Phased Alternative would have the same potential and less-than-significant impacts as those identified for the proposed project, and the mitigation measures associated with the proposed project would be required to minimize potential impacts associated with the development and operation of the Phased Alternative. Construction-related dust and particulate matter would be generated, additional vehicles would travel to the site during project installation and operation compared to current conditions, and odors would be generated.

Although impacts to grassland, oak woodland, and rock outcrops would ultimately be the same with the Phased Alternative as with the proposed project, impacts would not be completely realized until full build out of the project. Potential impacts to waters of the U.S., vernal pools, special status plant and animal species, nesting and migratory birds, and wildlife corridors from development of the Phased Alternative would be the same as those from the proposed project, and would be reduced to a less-than-significant level from the implementation of mitigation measures included in the proposed project. Stream setbacks would be maintained with the Phased Alternative, earthmoving activities would be restricted to the dry season, and erosion control measures would be installed prior to the wet season.

The Phased Alternative would result in the potential to affect previously unknown cultural resources, and could result in the discovery and disturbance of unknown human remains.

Like the proposed project and the Reduced Intensity Alternative, the Phased Alternative would result in a reduction in erosion and sediment yield compared to current conditions; however, rates that are reduced to the level discussed for the proposed project would not be realized until full buildout of the Phased Alternative. The Phased Alternative would not result in any changes that would alter the geologic setting to an extent that would initiate or exacerbate the potential for seismic hazards to occur at the property resulting in a risk of loss of life or property.

The Phased Alternative would require the use, storage and disposal of hazardous materials, similar to the proposed project. The release of hazardous materials into the environment during construction, operation and maintenance of the proposed project are potentially significant impacts. The mitigation measures included in the proposed project would be required for the Phased Alternative to minimize potential hazardous materials impacts.

Like the proposed project, the Phased Alternative would not result in significant transportation and traffic impacts.

The Phased Alternative would result in a reduction in the volume and rate of runoff, similar to the proposed project; however, reduced rates to the level of the proposed project would not be realized until full buildout of the Phased Alternative. Changes to channel stability, the potential for downstream flooding, and impacts to water quality and groundwater resources were less than significant with the proposed project, and would similarly be anticipated to result in less-than-significant impacts under the Phased Alternative. Groundwater demands under the Phased Alternative would be the same as the proposed project; however, demands at the level of the proposed project would not be realized until full buildout of the Phased Alternative.



### 5.3 FULL DEVELOPMENT ALTERNATIVE

Initially, over 730 acres were considered for vineyard development on the Circle S Ranch. Approximately 280 acres of potential vineyard areas were removed from consideration in an attempt to minimize environmental impacts identified during the preparation of the environmental studies for the project. These studies identified individual trees and groves of trees important to habitat in the area, wetlands, swales and special status plants that were avoided, which resulted in the design of the proposed project, as discussed in **Chapter 3.0**.

### REFERENCES

CEQA, 2006. *California Environmental Quality Act (CEQA) Guidelines 2006*. Public Resources Code, Sections 21000-21178 and California Code of Regulations, Sections 15000-15387. Produced by Consulting Engineers and Land Surveyors of California. 2005.

Napa County, 2005. *Napa County Code 2005*. Available online at [http://www.co.napa.ca.us/search/Code\\_Search.asp?LID=495](http://www.co.napa.ca.us/search/Code_Search.asp?LID=495).

# CHAPTER 6.0

## OTHER CEQA-REQUIRED SECTIONS

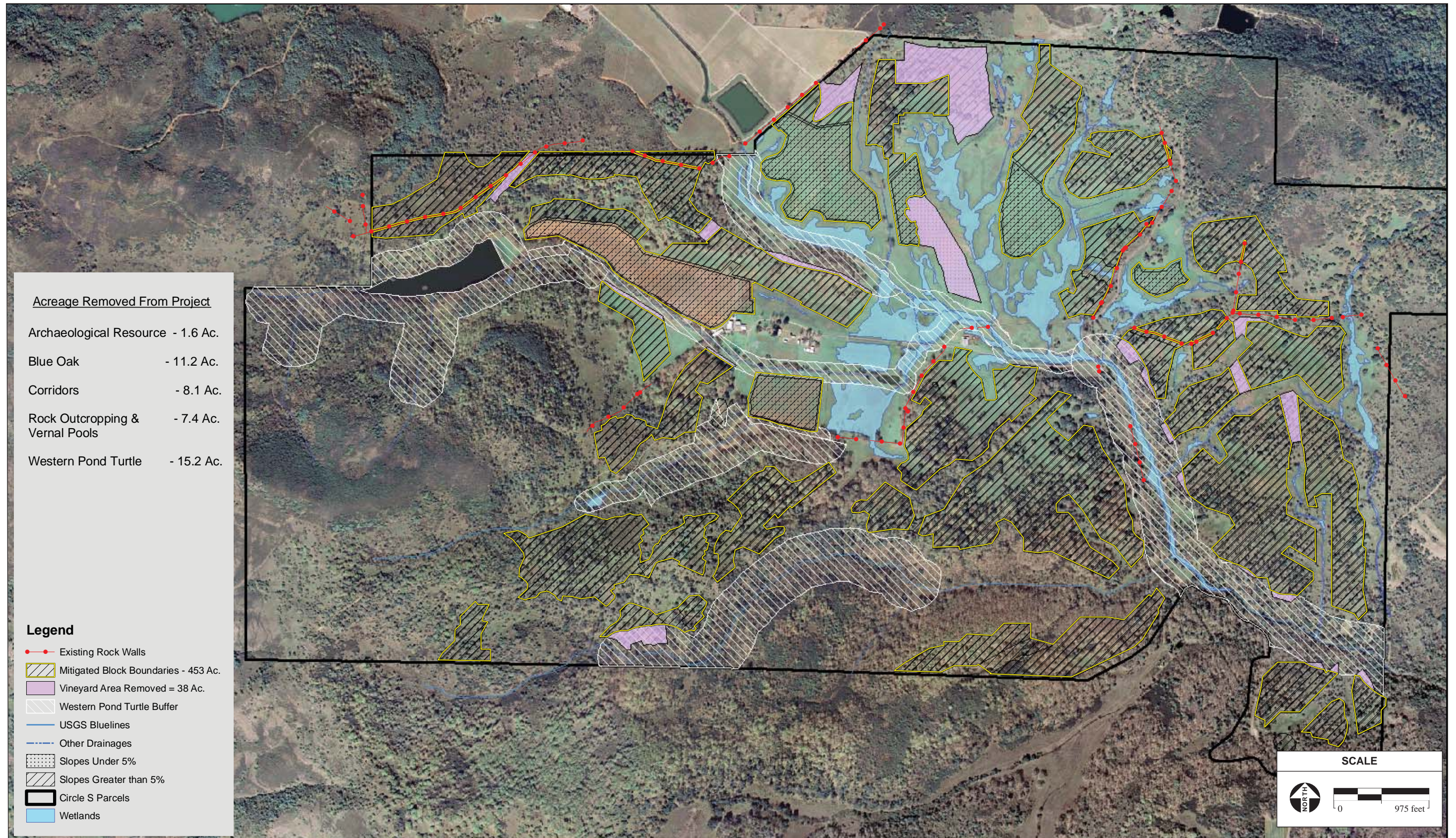
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### 6.1 CUMULATIVE IMPACTS

This Draft Environmental Impact Report (EIR) provides an analysis of overall cumulative impacts of #P06-01508-ECPA, taken together with other past, present, and probable future projects that produced/would produce related impacts, as required by Section 15130 of the California Environmental Quality Act (CEQA) *Guidelines*. **Figure 6-1** illustrates the approximate boundaries of the proposed vineyard blocks as mitigated in **Chapter 4.0**. The mitigated proposed project is consistent with the 2008 Napa County General Plan Element Goals and Policies (**Appendix N**) The CEQA *Guidelines* define a cumulative impact as two or more individual effects which, when considered together, are considerable, or which compound or increase other environmental impacts. A cumulative impact occurs from a change in the environment, which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable future projects. In other words, the goal of the required analysis is to first create a broad context in which to assess the project's incremental contribution to anticipated cumulative impacts, viewed on a geographic scale well beyond the project site itself, and then to determine whether the project's incremental contribution to any significant cumulative impacts from all projects is significant.

Consistent with CEQA *Guidelines* Section 15130, the discussion of cumulative impacts in this Draft EIR focuses on significant and potentially significant cumulative impacts. Section 15130 (b) of the CEQA *Guidelines* states the following for establishing the cumulative environment:

The discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great of detail as is provided for the effects attributable to the project alone. The discussion should be guided by the standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute, rather than the attributes of other projects which do not contribute to the cumulative impact. An adequate discussion of significant cumulative impacts should either list past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or provide a summary of projections contained in an adopted General Plan or related planning document, or in a prior environmental document which has been adopted or certified, which



described or evaluated regional or area wide conditions contributing to the cumulative impact. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency.

### 6.1.1 GEOGRAPHIC SCOPE

The California Environmental Quality Act requires that the cumulative analysis define the geographic scope of the area affected by the cumulative effect and provide a reasonable explanation for geographic limitations. As such, this analysis will rely on a list of Erosion Control Plan (ECP) projects that have the potential to contribute to cumulative impacts within the Milliken Reservoir watershed, with the exception of air quality and biological resources discussed below. The total drainage area of the Milliken Reservoir watershed is approximately 6,141 acres. Given the nature of #P06-01508-ECPA, the potential extent of environmental impacts identified in **Chapter 4.0** of this EIR are limited by the topography, drainage, and other physical features of the local area. Local topography and drainage has been delineated as defined by the Milliken Reservoir watershed, and therefore any potential incremental impact of the proposed project would be in addition to cumulative environment of other ECPs within the watershed.

### 6.1.2 PROJECT TIMING

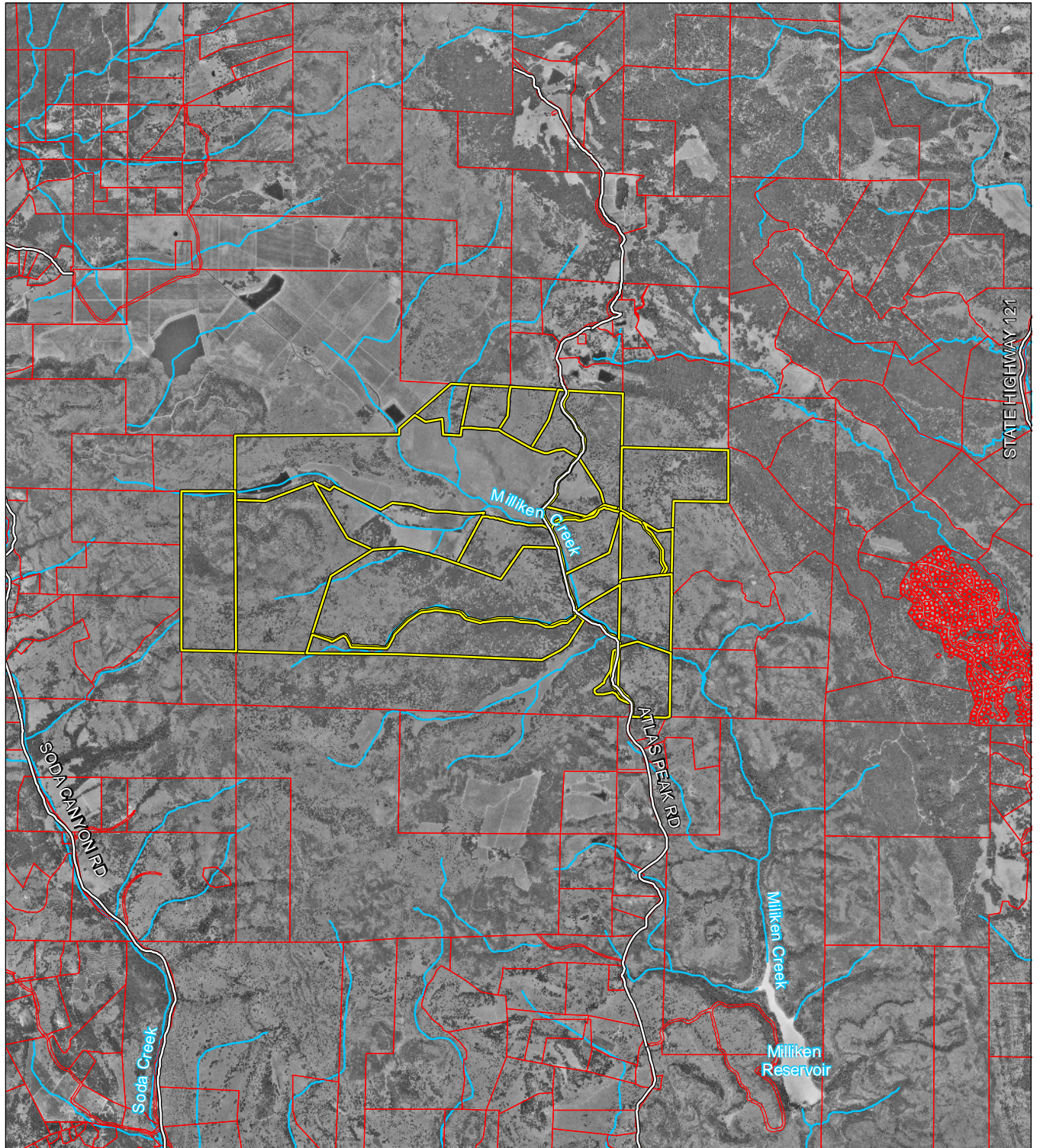
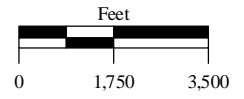
To determine the scope of the projects in the Milliken Reservoir watershed that were considered as part of the cumulative environment, past, present, and reasonably foreseeable future projects must be defined. Napa County's local CEQA Guidelines define a "past project" as a project that has been approved and has valid permits, or a project that was undertaken in the last ten years (Napa County, 2004). "Reasonably foreseeable probable future projects" are those projects currently under environmental review by the County or other agency with jurisdiction within the geographical limits of Napa County, those projects anticipated as later phases of previously approved projects, and public projects where money has been budgeted or the project has been included as part of an approved improvement plan. Those projects included in the Cumulative Environment section below meet the criteria for past projects, reasonably foreseeable future projects, or are simultaneously occurring with #P06-01508-ECPA (present project). Although the timing of the projects in the cumulative environment is likely to fluctuate due to schedule changes or other unknown factors, this analysis assumes these projects would be implemented concurrently with the installation of #P06-01508-ECPA.

### 6.1.3 CUMULATIVE ENVIRONMENT

A 1993 aerial photo of Milliken Reservoir watershed including the Circle S Ranch is shown in **Figure 6-2**. In 1993 vineyard development was predominantly located in the

**LEGEND**

- Circle S Ranch Property
- Napa County Parcels
- Milliken Reservoir watershed



SOURCE: PPI Engineering, 2007; Napa County, 2006; AES, 2007

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**Figure 6-2**  
Milliken Reservoir Watershed 1993 Aerial Photograph

northern portion of the watershed. Since 1993, development has occurred throughout the watershed. The current cumulative environment of ECPs determined for the analysis of cumulative impacts in Milliken Reservoir watershed is shown in **Figure 6-3**. The Milliken Reservoir drainage and the three mile radius cumulative environments discussed in this chapter are shown in **Figure 6-4**. A listing of these ECPs including the acreage and status of the development is provided in **Table 6-1**. Approved projects are those determined by the County to be under permit or developed within the past ten years, and pending projects are those that may be developed in the reasonably foreseeable future, including #P06-01508-ECPA.

**TABLE 6-1**  
CUMULATIVE ECP PROJECTS LIST FOR THE MILLIKEN RESERVOIR WATERSHED (1994/2007)<sup>1</sup>

ECP #	Applicant Name	Vineyard Development Area	Status
<b>Submitted in 1994</b>			
94256	Margorie Brown	0 <sup>2</sup>	Approved
<b>Submitted in 1998</b>			
98043	Jack Neal & son	22	Approved
98197	Pahlmeyer Winery	31	Approved
<b>Submitted in 1999</b>			
99540	Michael Parmenter	5	Approved
<b>Submitted in 2006</b>			
060128	Palmeyer Vineyards	1	Approved
0601508	Premier Pacific Vineyards	337	Subject Application
<b>Submitted in 2007</b>			
0700800	Hall Brambletree Associates, LP	171 <sup>3</sup>	Pending
<b>Total Acres of Pending Development:</b>		<b>508</b>	
<b>Total Acres of Approved Development:</b>		<b>59</b>	
<b>Total Acres of Development<sup>4</sup>:</b>		<b>567</b>	

<sup>1</sup> No applications submitted in 1993, 1995 to 1997, 2000 to 2005, or to the date of this publication in 2008.

<sup>2</sup> Quantity is in reality not zero, but less than half an acre.

<sup>3</sup> A total of 538 acres are proposed, of which 171 acres are estimated to be located within the Milliken Reservoir watershed.

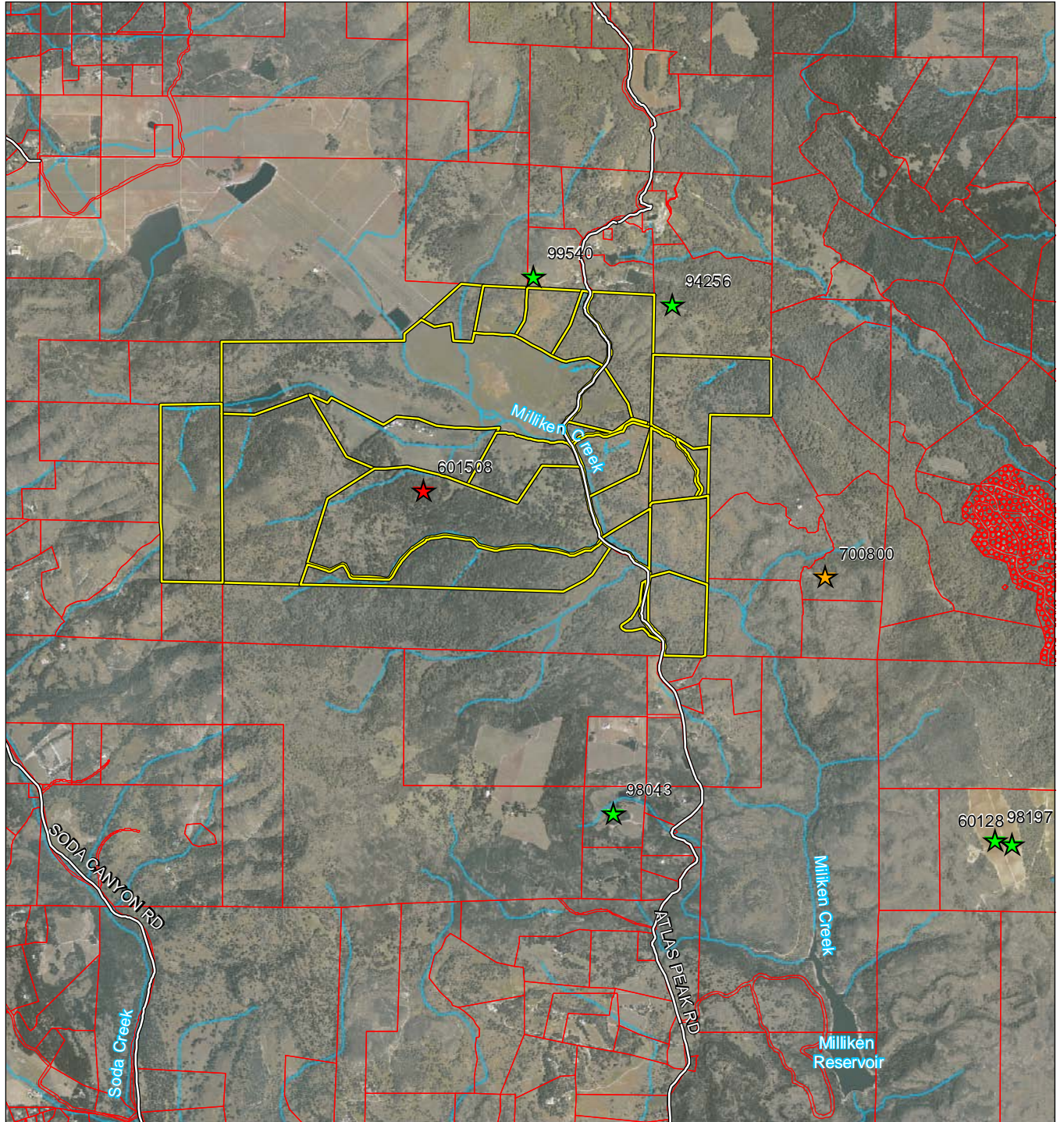
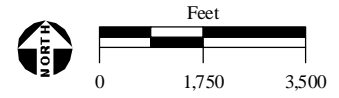
<sup>4</sup> Totals do not include those areas within the watershed developed that are under five percent slope.

Source: Napa County Conservation, Development and Planning Department, 2007.

In 1993 (**Figure 6-2**), the cumulative environment within the Milliken Reservoir watershed (6,141 acres) consisted of 368 acres of vineyard. Since 1993 there has been additional vineyard development totaling approximately 59 acres. An additional 508 acres of vineyard are pending ECP approval, including #P06-01508-ECPA. Approved and pending vineyard development since 1993 is estimated to total approximately 567 acres. The total acreage of vineyard development in Milliken Reservoir watershed, including pre-1993 development, approved ECPs, and pending ECPs is approximately 935 acres or approximately 15 percent of the total area.

**LEGEND**

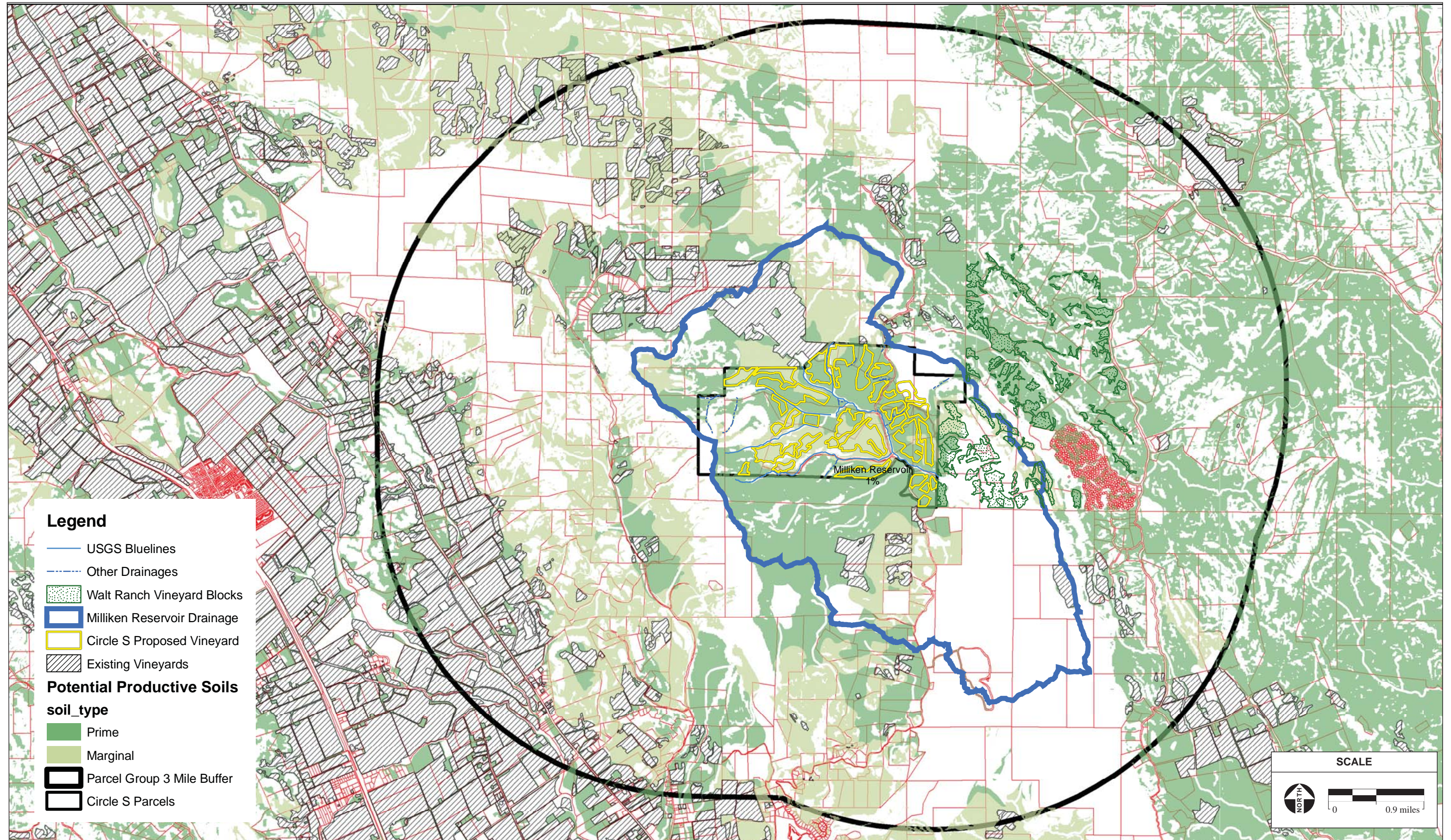
- USGS Streams
- - - Other Drainages
- ★ Subject ECP Application
- ★ Other Pending ECP Applications
- ★ Approved ECP Applications
- Circle S Ranch Property
- Napa County Parcels
- Milliken Reservoir watershed



SOURCE: PPI Engineering, 2007; Napa County, 2006; AES, 2007

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**Figure 6-3**  
Milliken Reservoir Watershed Erosion Control Plans





Given the trend of vineyard development since 1993 the analysis of reasonably foreseeable future projects considers the acreage of development beyond that included in **Table 6-1**. While it is not possible to quantify precisely the acreage and location of additional vineyard development that would be pursued by property owners in the watershed over time, it is possible to make a conservative estimate based on previous trends. To estimate the number of reasonably foreseeable projects that may be developed in the future, the number of approved and pending vineyard projects in the cumulative environment over the last 13 years (1995-2008) and their relative sizes (in acres) were used to project an estimation of vineyard development for the next three to five years. Over the past 13 years, approximately 567 acres of vineyard development were submitted for ECP approval, creating an average of 43.6 acres of vineyard development per year. However, an average over the 13-year period is a conservative estimate of potential future development for the watershed, since a large portion of vineyard development within Milliken Reservoir watershed was concentrated in two years (2006 and 2007) over the 13-year span.

Combined with Napa County policies and other site selection factors that limit the amount of land that can be converted to vineyard, the development of approximately 130.8 to 218.0 acres over the next three to five years is a conservative estimate. Chapter 18.108 of the Napa County Code includes policies that require setbacks of 35 to 150 feet from drainages (depending on slopes), and the preservation of at least 60 percent of tree cover and/or at least 40 percent of shrub cover as existed in 1993, which limits the amount of potential vineyard acreage that could be converted within the watershed. It has also been the County's experience with ECP projects that there are generally site specific issues, such as wetlands, other water features, rare plant species, or cultural resources that further reduce areas that can be developed to other land uses. Additionally, the vineyard acreage projections for the next three to five years do not consider environmental factors that influence vineyard site selection, such as sun exposure, soil type, water availability, slopes greater than 30 percent, or economic factors such as land availability, cost of development or investment returns.

#### 6.1.4 CUMULATIVE EFFECTS

This section identifies the potential cumulative effects of installation of #P06-01508-ECPA concurrently with the other vineyard projects in the Milliken Reservoir watershed identified in **Table 6-1**.

##### 6.1.4-1 AIR QUALITY

The geographic scope for the cumulative air quality impact analysis is the San Francisco Bay Area Air Basin (air basin), because air quality impacts would likely affect the entire San Francisco Bay Area region. Cumulative air quality issues in the air basin are addressed

through regional air quality control plans developed by the Bay Area Air Quality Management District (BAAQMD). These plans account for projected growth in the Bay Area, as embodied in the adopted General Plans of the various cities and counties that comprise the Bay Area. There is, therefore, no need to identify each and every specific “probable future project” that might contribute emissions within the air basin.

Project construction, including installation of #P06-01508-ECPA concurrent with other projects in the air basin would generate emissions of criteria pollutants, including suspended and inhalable particulate matter (PM<sub>10</sub>) and equipment exhaust emissions. For construction-related dust impacts, the BAAQMD recommends that significance be based on a consideration of the control measures to be implemented (BAAQMD, 1999). If appropriate mitigation measures are implemented to control respirable PM<sub>10</sub> emissions, then the temporary impacts associated with construction would be less than significant and less than cumulatively significant (discussed in **Chapter 4.1**). The BAAQMD Guidelines contain a list of feasible control measures for construction-related PM<sub>10</sub> emissions. The BAAQMD Guidelines also indicate that construction-related emissions of criteria pollutants are accounted for in the District’s emissions inventory that is the basis for regional air quality plans; thus, construction-related emissions are not expected to impede attainment or maintenance of ozone or carbon monoxide standards in the Bay Area. Operational impacts are accounted for in the BAAQMD plans discussed above. As such, the potential contribution to air quality impacts associated with the proposed project would be rendered less than cumulatively significant through the implementation of the mitigation measures discussed in **Chapter 4.1**.

### **Climate Change**

The Draft EIR prepared for the Napa County General Plan Update (February 2007) addressed cumulative global warming effects and concluded that cumulative impacts were significant and unavoidable for the County; however, under the Governor’s Office of Planning and Research (OPR) guidelines a project can be determined to have a less than significant impact by providing either project components or mitigation, which would reduce greenhouse gas (GHG) emissions. The cumulative context included land use and traffic projections (regional and local), approved and known pending plans and projects (city and County plans/projects), vineyard expansion projections, recreation and open space projects, transportation and other infrastructure projects, flood control projects, as well as relevant regional planning and regulatory changes (e.g. TMDL and Basin Plan amendments). The following analysis is being tiered from the Draft EIR for the Napa County General Plan Update (Napa County, 2007) pursuant to Section 15152 of the CEQA Guidelines.

The development and operation of the proposed project would emit GHGs and would have the potential to exacerbate global climate change. Project sources of GHG emission would

include vehicles (produce and material transports and workers) traveling to and from Circle S, energy use, and water transport. The potential loss of sources, which sequester carbon, would include removal of trees, tilling/breaking of the soil, and loss of organic materials. Under the OPR guidelines, project emissions must be quantified. **Table 6-2** shows the estimated project emission of GHG from mobile, area, and indirect sources. Construction emissions would be reduced with the implementation of the BAAQMD construction emission reduction measures outlined in **Mitigation Measure 4.1-1** in **Section 4.1**.

Estimated GHG emissions from the proposed project (**Table 6-2**) would be approximately 0.00078 percent of California GHG emissions and approximately 0.00000053 percent of Globe GHG emissions (refer to **Section 4.1**, **Table 4.1-3**).

**TABLE 6-2**  
OPERATIONAL GREENHOUSE GAS EMISSIONS

<b>CO<sub>2</sub> Emissions (tons per year)</b>					
<b>Mobile Sources<sup>1</sup></b>			<b>Area Sources<sup>1</sup></b>		
2,343			0		
<b>CH<sub>4</sub> and N<sub>2</sub>O Emission from Mobile Sources<sup>2</sup></b>					
<b>Emission Factor (CO<sub>2</sub>/CH<sub>4</sub>/N<sub>2</sub>O)</b>	<b>Miles Traveled</b>	<b>CH<sub>4</sub> Emissions</b>	<b>N<sub>2</sub>O Emissions</b>	<b>Total CO<sub>2</sub>e</b>	
<b>g/mile</b>	<b>miles/day</b>	<b>tons per year</b>			
552.08/0.05/0.05	2,453	1	15	16	
<b>Indirect GHG emissions<sup>2</sup></b>					
<b>Emission Factor (Kg of CO<sub>2</sub>/CH<sub>4</sub>/N<sub>2</sub>O)</b>	<b>Estimated kW-h Usage<sup>3</sup></b>	<b>CO<sub>2</sub> Emissions</b>	<b>CH<sub>4</sub> Emissions</b>	<b>N<sub>2</sub>O Emissions</b>	<b>Total CO<sub>2</sub>e</b>
<b>lb/MW-h</b>	<b>MW-h/year</b>	<b>tons per year</b>			
804.54/0.006/0.0037	2	0	0.00	0.00	0
<b>Proposed Project - GHG Emissions</b>					<b>4,703</b>

<sup>1</sup> Estimated from EPA and CARB approved URBEMIS air quality program

<sup>2</sup> Emission factors from Climate Change Action Registry

<sup>3</sup> Estimated using 4,500 kilowatts-hours/month of power used.  
Source: URBEMIS, 2007 (**Appendix C**); Climate Change Action Registry, 2007.

The project includes components which would reduce GHG emission and retain a number of carbon sequestering sources. These reductions in emissions and atmospheric carbon are consistent with AB 32 reduction strategies and the OPR guidelines. The following are proposed with the project and would reduce GHG emissions and/or increase atmospheric carbon sequestering:

- The conversion of grazing land to farm land;
- Implementation of the tree management plan;
- Converting diesel water pumps to electric.

Cattle are currently and have historically been grazed on the Circle S Ranch. The proposed project would eliminate this land use. Cattle are the largest producer of methane gas, which is a GHG; thus, the proposed project would replace a land use which currently produces GHGs with a land use which sequesters carbon. This would reduce atmospheric GHG. The proposed project includes the implementation of a tree management plan. The tree management plan would consist of planting trees and thinning existing trees to provide better health and regeneration, this coupled with planting agricultural grapevines, which also sequester atmospheric carbon, would reduce global atmospheric GHG.

Agricultural lands depend on water for irrigation, and this water must be provided either from wells, lakes or streams. The movement of water can be energy intensive. In California the movement of water uses 14 percent of the State's total energy usage. The use of gas or diesel powered pumps to extract water from the ground or move water from lakes or streams increase GHG emissions. The proposed project would install four new wells and would operate four existing wells, all of which would use electric pumps as soon as PG&E power becomes available. The wells would be onsite and would be located in close proximity to the propose vineyard blocks; therefore, reducing the need to transport water far distances. This would reduce the energy needed to transport water; thus, reducing GHG emissions.

Furthermore, several aspects of the project's proposed design are benefits that would reduce global climate change impacts. The project would minimize the burning of trees and wood removed for vineyard development, construction equipment would be kept onsite during construction (which would minimize truck trips), engine idling would be minimized and equipment would be properly maintained, a cover crop would be established on all disturbed areas, and risk of significant fires on the property would be reduced by establishing fire access around the property.

The above measures are part of the proposed project and would be implemented as part of the project if approved. The project would reduce and/or sequester GHG emissions (including through **Mitigation Measure 4.2-19**, which retains existing woodlands onsite, and **Mitigation Measure 4.1-1**); therefore, the project would be considered consistent with the goals of AB 32 and guidance set forth by the OPR and would result in a less than significant impact to climate change.

#### **6.1.4-2 BIOLOGICAL RESOURCES**

The geographic scope for the cumulative biological resources impact analysis is the area within a 3-mile radius of the project site, as shown in **Figure 6-4**. The estimated acreage of vineyard development within a 3-mile radius of the Circle S Ranch (33,315 acres) in 1993 was approximately 2,146 acres. Since 1993 there has been additional vineyard

development of approximately 1,787 acres (including 405 net acres of vineyard proposed and existing on Circle S Ranch). The total acreage of vineyard development within a 3-mile radius of the project site, including pre-1993 development, is approximately 3,933 acres, or approximately 12 percent of the total area. An average of 119.1 acres of vineyard have been developed per year within 3-miles of the project site (including the proposed project) since 1993. Over the next three to five years another approximately 357.4 to 595.5 acres of vineyard development within the three mile region would be considered reasonably foreseeable, bringing the total cumulative habitat loss in the region from past, present and reasonably foreseeable projects to between approximately 4,290 to 4,529 acres, or approximately 13 to 14 percent. Approximately 29,025 to 28,786 acres, or approximately 87 to 86 percent of the area within a 3-mile radius of the project site, is anticipated to remain undeveloped.

### **Impacts to Biological Resources During Construction**

As discussed in **Chapter 4.2**, several habitat types would be impacted by construction of the proposed project. **Chapter 4.2** includes mitigation measures to reduce potential impacts to special status species and habitats during construction to less-than-significant levels. The County would similarly require future projects with potentially significant impacts to wildlife and plant species to comply with federal, state and local regulations and ordinances protecting biological resources through implementation of mitigation measures during construction to reduce impacts to less than significant

### **Impacts to Biological Resources Due to Vineyard Conversion**

Although vineyards only provide limited habitat value for wildlife, local regulations ensure that installation of vineyards does not necessarily represent a total loss of habitat for wildlife. Napa County Conservation Regulations (Napa County Code, Chapter 18.108) requires projects to maintain portions of parcels proposed for development as open space, providing habitat for plants, and foraging and nesting opportunities for wildlife. Applicants with projects in Sensitive Domestic Watershed Drainages (like the proposed project) are required to enter into a memorandum of understanding or record a deed restriction for each parcel describing and illustrating the amount of vegetation to be retained on each of the parcels to ensure future compliance with Napa County Code (Napa County Code, Chapter 18.108.027B). As noted earlier, Napa County Conservation Regulations generally preclude development on slopes greater than 30 percent, require setbacks of 35 to 150 feet from all County definitional streams (depending on slopes), and require preservation of at least 60 percent of tree cover and/or at least 40 percent of shrub cover on parcels or holdings as existed on June 16, 1993 if located within a County-designated sensitive domestic water supply watershed.

Habitats on the project site where special status species may occur include Black Oak Alliance, Blue Oak Alliance, California Annual Grasslands Alliance, Coast Live Oak - Blue Oak - Foothill Pine Alliance, Foothill Pine Alliance, Mixed Oak Alliance, Sclerophyllous Shrubland Formation and Valley Oak - California bay - Coast live oak Alliance (Napa County, 2005b). Although the project proposes to remove portions of these habitats, they are still relatively common in the cumulative environment (**Table 6-3**), and specific mitigation and avoidance measures specified in **Section 4.2** reduce the cumulative impacts to special status species potential habitats to less-than-significant levels. **Table 6-3** shows habitats on the project site where special status species may occur in the context of the cumulative environment.

**TABLE 6-3**  
PROPOSED PROJECT HABITAT CONVERSION WITHIN THE CUMULATIVE ENVIRONMENT

Vegetation Alliances	3-Mile Radius		Project Site		Proposed Blocks	
	Acreage	% in Napa County	Acreage	% in 3-Mile Radius	Acreage	% in 3-Mile Radius
Black Oak Alliance	766.65	29.80%	141.27	18.43%	36.61	4.78%
Blue Oak Alliance	1,046.90	2.37%	18	1.72%	1.58 <sup>1</sup>	0.15%
California Annual Grasslands Alliance	2,453.10	6.26%	226.73	9.24%	93.23	3.80%
Coast Live Oak - Blue Oak - (Foothill Pine) NFD Association	5,214.61	19.77%	457.32	8.77%	187.76	3.60%
Foothill Pine Alliance	25.81	1.38%	41.65	161.38%	5.59	21.66%
Mixed Oak Alliance	2,592.08	9.03%	203.65	7.86%	50.13	1.93%
Sclerophyllous Shrubland Formation	2,166.31	66.10%	95.42	4.40%	13.85	0.64%
Valley Oak - (California Bay - Coast Live Oak - Walnut - Ash) Riparian Forest NFD Association	598.92	10.47%	10.84	1.81%	0.66	0.11%
Sensitive Biotic Communities	3-Mile Radius		Project Site		Proposed Blocks	
	Acreage	% in Napa County	% Foss Valley	% in 3-Mile Radius	Acreage	% in 3-Mile Radius
Mixed Willow Super Alliance	6.61	1.22%	3.91	51.38%	0	0.00%

1. 12.84 acres are proposed for removal with the project; however, only approximately 1.6 acres would be impacted with implementation of the avoidance measure in Mitigation Measure 4.2-19.

Source: Thorne et al. 2004; Napa County, 2008.

The project proposes the removal of an estimated 289 acres of oak woodland (containing approximately 9,571 oak trees). However, through the implementation of **Mitigation Measure 4.2-19** this acreage would be reduced to approximately 278 acres and impacts would be reduced to a less-than-significant level by avoiding approximately 91 percent of Blue Oak Alliance on the property by reconfiguring proposed Blocks 1A, 2A and 2B, and preserving approximately 556 acres of oak woodland (at a 2:1 preservation-to-vineyard ratio per acre basis), or 63 percent, of the approximately 871 acres of oak woodland that occur on the project site, as well as through enhancement of wooded areas onsite.

As noted in **Table 6-1** above, there is only one additional pending Erosion Control Plan Application in the Milliken Reservoir Watershed: #P07-00800-ECPA of Hall Brambletree Associates. As proposed in the application, #P07-00800-ECPA would develop 397 net acres of vineyard within 538 gross acres disturbed on slopes greater than five percent on the approximately 2,300-acre Walt Ranch. Development of #P07-00800-ECPA as currently proposed would remove approximately 16,047 oak trees, or approximately 14 percent of oaks on the property. Similar to the proposed project, #P07-00800-ECPA and any future proposed project in the cumulative environment shall be developed consistent with Napa County General Plan Goals CON-2 and CON-6, and Policies CON-17 and CON-24, which require maintenance and enhancement of existing levels of biodiversity, oak woodland preservation and the protection of sensitive biotic communities and habitats of limited distribution. As such, cumulative impacts to oak woodland are considered less than significant.

Preservation of stream corridors that function, in part, as wildlife movement routes connected to larger habitat areas provide overall connectivity within the landscape and add to the value of these areas as wildlife corridors. As part of the project, deer fencing would surround the vineyard blocks or clusters of vineyard blocks. There would be impacts to animal movement as a consequence of the installation of the deer fencing; however, maintenance of minimum 100 foot corridors between the fenced areas as discussed in **Mitigation Measure 4.2-7** would allow for wildlife movement between contiguous habitats both on and offsite. Stream corridors have been preserved throughout the project site and stream setbacks that range in width from 20 to 50 feet on either side of drainages have been maintained. As shown on **Figure 4.2-8**, stream corridors have been preserved throughout the project site and streams as defined by Napa County have minimum setbacks of 50 feet on either side of the streams. Minimum 50-foot setbacks are maintained around all wetlands as well. These areas will be preserved in perpetuity. In addition, **Mitigation Measure 4.2-13** includes the protection of minimum 100 foot buffers from identified water habitats surrounded by open grassland and agricultural areas onsite to protect prime Western pond turtle nesting habitat and 275 foot buffers along water features that are surrounded by oak woodland to provide ample protection of Western pond turtle overwintering habitats.

Open space areas adjacent to Milliken Creek would be preserved with the proposed project, thereby benefiting the wildlife that use the Milliken Creek corridor and other corridors along the smaller streams in this area. Undeveloped areas provide habitat for wildlife, and the large uninterrupted corridor along Milliken Creek minimizes fragmentation of wildlife habitat. Due to the presence and maintenance of these wildlife corridors, the cumulative impact on habitat fragmentation as a result of the proposed project is expected to be less than significant.

## Impacts to Biological Resources Due to Other Project Components

The Circle S Ranch historically has been used as pasture for cattle grazing. The floor of the Foss Valley was grazed more heavily than the surrounding hills, and the long history of grazing has helped to maintain open grassland and woodland habitat, but may have reduced some native plant species as well. With the mitigation discussed in **Chapter 4.2**, selective livestock grazing would be permitted in the grasslands for weed management and fire prevention when vineyard management deems it necessary and beneficial. When livestock are grazed outside the vineyard blocks, temporary fencing would be used to prevent livestock access to Milliken Creek and its tributaries. Selective cattle grazing should be beneficial to the grassland habitats onsite, by maintaining species diversity. However, overgrazing would result in deterioration of the undeveloped grassland habitats on the project site, opening up more microsites for the establishment of increased densities of invasive plant species and favoring those plant species that cattle avoid, resulting in a loss of native plant and animal diversity. However, as discussed in **Chapter 4.2**, minimal cattle grazing would occur on the project site to manage particularly noxious invaders and encourage overall diversity. Both native and nonnative grasslands generally require some grazing to maintain an open stand structure. Since the grassland habitat is currently dominated by nonnative plant species, and cattle grazing would be managed onsite to optimize grassland diversity, the cumulative impact after implementation of the mitigation measures would be less than significant.

### 6.1.4-3 CULTURAL RESOURCES

The geographic scope for the cultural resources cumulative impact analysis is the Milliken Reservoir watershed, because the projects listed in **Table 6-1** have the potential to degrade existing cultural resources in the surrounding area. Installation of new vineyard blocks through the development of vineyard projects in the Milliken Reservoir watershed has the potential to impact prehistoric resources, historic resources or unknown archaeological resources. As stated in **Chapter 4.3**, potential impacts to known and unknown cultural resources would be reduced to less-than-significant levels through the implementation of the identified mitigation measures. As such, the proposed project's potential contribution to cultural resource impacts associated with the installation of the new vineyard blocks would be rendered less than cumulatively significant.

### 6.1.4-4 GEOLOGY AND SOILS

Cumulative geologic and soils impacts are limited to sedimentation, since seismic impacts are locally specific. Sedimentation impacts from the proposed project would occur to onsite sediment trapping waters and offsite receiving waters of Milliken Creek and Milliken Reservoir. Therefore, Milliken watershed defines the geographic scope of cumulative



sedimentation impacts. Cumulative impacts to sedimentation could result from past, present, and reasonably foreseeable future ECP projects within Milliken Creek watershed. Cumulative effects would be considered significant if cumulative sedimentation from past, present, and future projects in the watershed is considerable, or if the incremental impact of the proposed project within the cumulative environment were considerable.

To estimate sedimentation impacts from the proposed project, an Erosion and Sedimentation Assessment prepared for the proposed project calculated a sediment budget, which estimated sediment erosion from the project site, sediment yield to onsite drainages and offsite receiving waters, from existing and proposed project conditions (**Appendix G**; Trso, 2007). **Chapter 4.4** discusses potential sedimentation impacts to receiving waters from the proposed project. It was estimated that no net increase in sediment would be discharged from the project site under proposed project conditions. In fact, as a result of the proposed project total sediment yield to onsite drainages would be reduced by 491.5 tons per year (26 percent), and total sediment yield offsite would be reduced by 338.5 tons per year (30 percent). These reductions would occur as a result of the erosion control measures proposed in #P06-01508-ECPA and the removal (minimization) of existing cattle grazing activities. The reduction in sediment yield indicates that the proposed project would not have an incremental impact on sedimentation in the Milliken Reservoir watershed.

The sediment budget also estimated sedimentation impacts from other vineyard development within the cumulative environment. Sedimentation from these projects is captured in the category "Other Properties Combined" in **Table 4.4-2**. Sedimentation from vineyard development completed before the sediment budget was completed is reflected in the existing conditions calculation. At the time the sediment budget was completed no foreseeable vineyard development was anticipated in the cumulative environment other than the proposed project. This is demonstrated by no change in the estimation of sediment yield onsite or offsite from the Other Properties Combined category, as shown in **Table 4.4-2**. However, since the sediment budget was completed, #P06-00800-ECPA was submitted to Napa County for the development of 538 gross acres of vineyard, of which approximately 171 gross acres are located within the Milliken Reservoir watershed. As of the date this analysis was prepared, no estimate of sediment yield from #P06-00800-ECPA was available.

#### **6.1.4-5 HAZARDOUS MATERIALS**

The geographic scope for the hazardous materials cumulative impact analysis is the Milliken Reservoir watershed, as any release of improperly contained hazardous materials into the environment could reach the surface and/or groundwater of the Milliken Reservoir watershed. The approval of #P06-01508-ECPA would increase the use of hazardous materials within the project site. However, the cumulative increase in use of hazardous

materials and their impact on the environment would be negligible through compliance with federal, state, and local regulations and best management practices outlined in **Chapter 4.5**.

As discussed in the mitigation measures in **Chapter 4.5**, compliance with the Napa County Department of Environmental Management regulations for hazardous materials storage would reduce the risk of spillage and leaks, and would prepare employees and other emergency response personnel for an incident. Standard operating procedures would reduce the potential for release of hazardous materials into the environment and reduce the potential for hazardous materials to reach onsite streams if an incident occurred during grading, construction, operation and maintenance of the proposed project. Compliance with the Napa County Agricultural Commissioner's regulations for pesticide use, continued development of Integrated Pest Management Programs, and proper vehicle and equipment rinse areas away from water sources decrease the risk of contamination to humans and the environment. Finally, the proper storage and continued use of the waste oil recycling program reduces the potential for contamination of the environment from waste oils.

#### 6.1.4-6 HYDROLOGY AND WATER QUALITY

##### Impacts to Runoff

Impacts to runoff from the proposed project would have the potential to affect the volume and rate of runoff in onsite drainages and the offsite receiving water of Milliken Creek and Milliken Reservoir. Therefore, Milliken watershed defines the geographic scope of cumulative sedimentation impacts. Cumulative impacts to runoff could occur from past, present, and reasonably foreseeable future ECP projects within the Milliken Reservoir watershed. Cumulative effects would be considered significant if the cumulative rate and volume of runoff from past, present, and future projects in the watershed to receiving waters is considerable, or if the incremental impact of the rate and volume of the runoff from the proposed project to receiving waters within the cumulative environment is considerable.

To estimate the rate and volume of runoff from the proposed project, a hydrologic analysis was completed to calculate peak runoff flows and the total volume of runoff for 2-, 5-, 10-, 25-, 50-, and 100-year storm events (**Appendix I**; Ayers Associates, 2006). **Chapter 4.6** discusses the potential impacts to the rate and volume of runoff discharged to receiving waters from the proposed project. It was estimated that no increase in peak flows or the volume of runoff would occur from the modeled storm event scenarios. In fact, as a result of the proposed project peak flows and the volume of runoff would decrease for each onsite drainage watershed and the drainage outlet for the project site on Milliken Creek (**Table 4.6-3** and **Table 4.6-4**). The reduction in the peak flows and the volume of runoff for drainages throughout the project site and receiving waters indicates that the proposed

project would not have an incremental impact on sedimentation in the Milliken Reservoir watershed.







Impacts to peak flows and the volume of runoff from vineyard development completed before the hydrologic analysis are captured in the existing conditions estimates. Since #P06-00800-ECPA was submitted to Napa County after the proposed project for the development of 538 gross acres of vineyard, of which approximately 171 gross acres are located within the Milliken Reservoir watershed, this development is considered reasonably foreseeable. As of the date this analysis was prepared, no estimate of peak flow estimates or runoff volume from #P06-00800-ECPA were available.

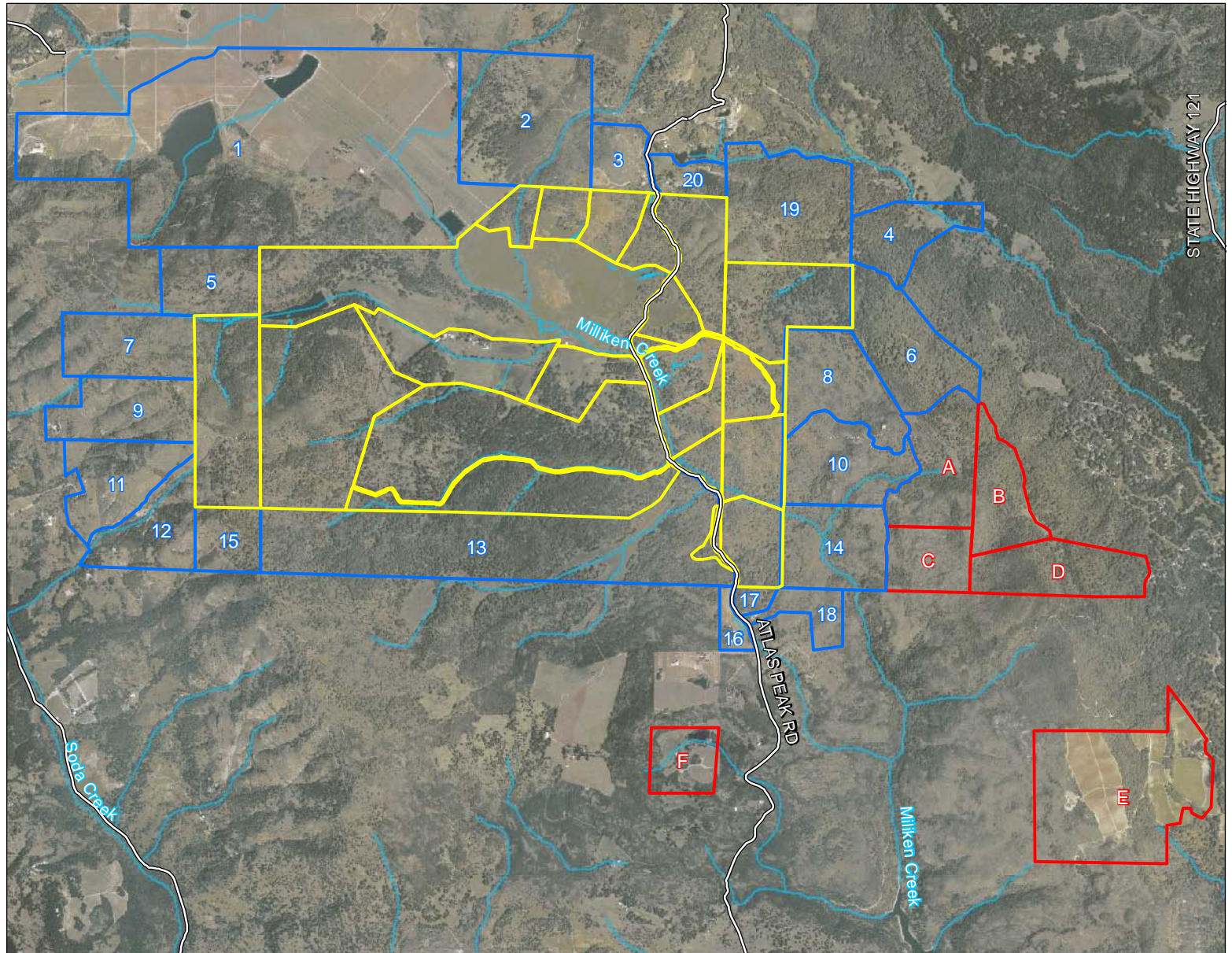
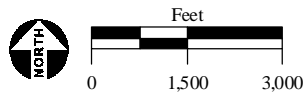
### Impacts to Groundwater

The proposed project would, in part, be irrigated with groundwater. Groundwater demands are estimated to be 203 acre-feet (af) for each of the first three years of vineyard irrigation and 142 af per year after (RCS, 2007); and a total of approximately 206 af per year including residential use with the proposed project (**Chapter 4.6**). Napa County's allowable allotment of groundwater for parcels located in mountain areas that are not designated as groundwater deficient areas is 0.5 af per acre per year. Accordingly, the project site is allowed by Napa County to utilize 796.5 af per year (1593 acres x 0.5 af per year) of groundwater. A groundwater analysis was completed by Richard C. Slade & Associates (2007) to determine impacts of the proposed project on local groundwater levels and groundwater supplies, and is provided as **Appendix J**. The analysis determined that utilizing existing onsite groundwater wells to meet irrigation demands would not result in substantial adverse impacts to groundwater levels or resources (**Impact 4.6-4**). These results indicate that groundwater levels would also not be substantially affected in neighboring wells, and a similar conclusion can be drawn about the four proposed wells given their locations on the project site. Since groundwater demands are within Napa County's allowable allotment and the effect on groundwater levels and supply would not be substantial, the proposed project would have a less-than-significant incremental impact.

To evaluate groundwater demands from the cumulative environment, potential irrigation demands are evaluated for the scenario of maximum vineyard development on the 20 parcels contiguous to the project site and others parcels within the Milliken Reservoir watershed containing ECPAs, are illustrated in **Figure 6-5**. Based on Napa County Code Section 18.108.027, each parcel would be required to maintain 40 percent of shrub vegetation and 60 percent of the tree canopy that existing on the parcel on June 16, 1993. Following this requirement, 60 percent of any parcel is the maximum amount that could be converted to vineyard. However, this represents a worst-case scenario and given factors of tree canopy and hillslopes, this intensity of vineyard conversion is not expected to occur. The parcels shown in **Figure 6-5** have a total area of approximately 2,702 acres, of which

**LEGEND**

-  USGS Streams
-  Other Drainages
-  Milliken Reservoir watershed
-  Circle S Ranch Property
-  Contiguous Parcels
-  Milliken Reservoir Watershed ECPA Parcels



**Figure 6-5**  
Cumulative Groundwater Setting

approximately 1,621 acres could be converted into vineyard. The rates used to estimate irrigation demands are the same that are used in **Impact 4.6-4**. Maximum irrigation demands, based on the first three years of vine growth, would total approximately 811 af per season (1,621 acres x 0.5 af), and minimum irrigation demands would total approximately 567 af per season (1,621 acres x 0.35 af). Including the proposed project (maximum of 205 af and minimum of 142 af per season), maximum demand totals approximately 1,016 af per season, and minimum demand totals approximately 709 af per season.

Groundwater available to the Circle S Ranch and the Milliken Reservoir watershed is defined by the coverage of Sonoma Volcanics beneath these areas. Sonoma Volcanics represent the principal water bearing geologic formation in the region, and there is significant groundwater storage in these areas, as demonstrated in **Chapter 4.6**. To estimate recharge for the cumulative environment defined within these areas, the same methodology was used as in **Impact 4.6-4**. Accordingly, the long term average annual groundwater recharge for the cumulative environment is 550 af per year (2,702 acres x 2.91 in per year x 7 percent). Including the proposed project (325 af per season), annual groundwater recharge beneath the cumulative environment would be 875 af per season. This analysis demonstrates that under the worst-case scenario groundwater recharge would fall between minimum and maximum irrigation demands. However, the Circle S Ranch would provide a large portion of groundwater recharge relative to the remainder of the cumulative environment. In addition, it is not expected that cumulative groundwater demands would reach the maximum potential, and recharge would be greater than or similar

to irrigation demands. As discussed in **Impact 4.6-4**, abundant groundwater storage is found in the Sonoma Volcanics bedrock that lies beneath the Milliken Reservoir watershed. Since the groundwater levels would not be substantially impacted from the proposed project, and it is anticipated that adequate groundwater resources would remain beneath the cumulative environment, the overall cumulative effect of the past, present, and reasonably foreseeable future projects is not considerable and the incremental impact of the project considered in the context of the cumulative projects would not be significant.

## 6.2 GROWTH INDUCMENT

CEQA *Guidelines* Section 15126.2 (d) require that an EIR evaluate the growth inducing impacts of the proposed project and provide the following guidance for assessing growth inducing impacts:

Discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth. Increases in population may tax existing community

service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

Growth inducement itself is not an environmental effect, but may foreseeably lead to environmental effects. These environmental effects may include increased demand on other community and public services and infrastructure, increased traffic and noise, degradation of air or water quality, degradation or loss of plant or animal habitats, or conversion of agricultural and open space land to urban uses.

No growth inducement is expected to be generated from installation of #P06-01508-ECPA. As discussed in **Chapter 1.8**, the proposed project would not result in new homes, businesses or roads; would not increase demand for public services, infrastructure, or utility service systems; and would not generate significant additional noise. The project is consistent with Napa County General Plan and zoning agricultural designations for the site. No induced population growth would occur directly or indirectly. While the project would require up to approximately 80 workers, workers would either already be employed at the vineyard or be located in the local area.

### **6.3 SIGNIFICANT, UNAVOIDABLE ENVIRONMENTAL IMPACTS**

Any project-related and cumulative impacts that were identified as potentially significant have been reduced to a less-than-significant level by mitigation measures. Therefore, no significant and unavoidable impacts would result from implementation of the proposed project if all recommended mitigation measures are adopted.

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# CHAPTER 7.0

## REPORT PREPARATION

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### 7.1 LEAD AGENCY

***NAPA COUNTY CONSERVATION, DEVELOPMENT AND PLANNING***

Attn: Brian Bordona  
1195 Third Street, Suite 210  
Napa, CA 94559

### 7.2 EIR CONSULTANTS

***ANALYTICAL ENVIRONMENTAL SERVICES***

1801 7th Street, Suite 100  
Sacramento, CA 95811  
(916) 447-3479

David Zweig, Project Director  
Jennifer Aranda, Project Manager  
Pete Bontadelli, Biological Resources Director  
Kelly Buja, Associate Biologist  
Latisha Burnaugh, Associate Biologist  
Pete Connelly, Associate Environmental Specialist  
Adrienne Edwards, Associate Biologist  
Cliff Feldheim, Associate Biologist  
Matthew Joseph, Associate Environmental Specialist  
Damon Haydu, Cultural Resources Specialist  
Mike Taggart, Senior Cultural Resources Specialist  
Dana Hirschberg, Senior Graphic Designer  
Ryan Jolley, Associate Environmental Specialist  
Glenn Mayfield, Graphic Designer  
Erin Quinn, Associate Environmental Specialist

## **CONSULTANTS**

Archaeological Services, Inc.  
Jay M. Flaherty  
9467 Chippewa Trail  
Kelseyville, CA 95451

Ayres Associates  
2150 River Plaza Drive, Suite 330  
Sacramento, CA 95833

ESA Associates  
8950 Cal Center Drive  
Building 3, Suite 300  
Sacramento, CA 95826

LandWatch, Inc.  
1650 Borel Place, Suite 204  
San Mateo, CA 94402

Richard C. Slade and Associates, LLC  
Consulting Groundwater Geologists  
12750 Ventura Boulevard, Suite 202  
Studio City, CA 91604

Martin Trso, P.G.  
Consulting Geomorphologist  
1765 Oxford Street  
Berkeley, CA 94709

Ted Winfield and Associates  
1455 Wagoner Drive  
Livermore, CA 94550

## **7.3 FEDERAL AGENCIES CONSULTED**

United State Fish and Wildlife Service  
United States Army Corps of Engineers

## **7.4 STATE AGENCIES CONSULTED**

California Department of Fish and Game  
California Department of Forestry and Fire Protection  
California Department of Transportation  
Regional Water Quality Control Board, San Francisco Bay District

## **7.5 LOCAL GOVERNMENT AGENCIES CONSULTED**

City of Napa  
Napa County, Conservation, Development and Planning Department  
Napa County Resource Conservation District